

THE IRON AGE

New York, September 19, 1918

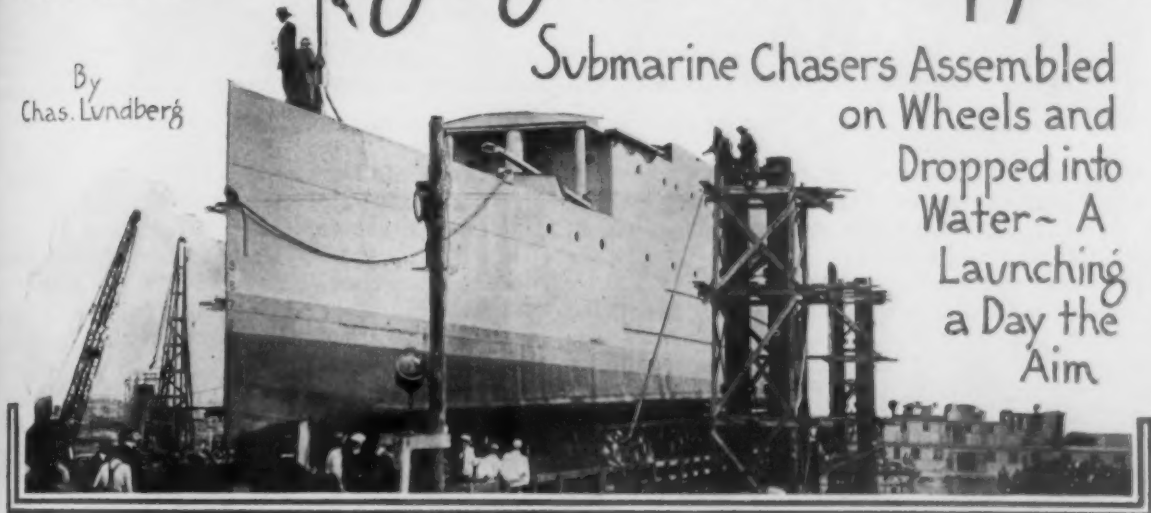
ESTABLISHED 1855

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Manufacturing Eagles at Ford Shipyard

By
Chas. Lundberg

Submarine Chasers Assembled
on Wheels and
Dropped into
Water—A
Launching
a Day the
Aim



Each Ship On a 48-Wheel Carriage Is Rolled Upon a Bridge and Then Lowered Into the Water

EAGLE NO. 1 was launched July 11, 1918. This brief statement is significant, not only of what is to come, but of what has been done. Among the great forces set at work by the war, the combination of energy, engineering skill and capital which put the Eagles afloat will take high rank when history is written.

Built in the marine department of the Ford Motor Co., on the River Rouge, Detroit, Eagle No. 1 is the forerunner of scores of other submarine chasers eventually to be launched at the rate of one a day unless all plans go awry. In a broad way, the Ford organization is manufacturing ships under the same general plan used in making Ford automobiles, an undertaking involving the creation of a tremendous plant, methods and equipment unique in shipbuilding, and the solving of unusual engineering problems. The Eagles are not motor boats, as many have imagined, but oil-burning, steam-turbine-driven ships, 200 ft. in length and of 25-ft. beam. That they are swift goes without saying. They are built of steel throughout. No. 1 was launched two months after the laying of the keel.

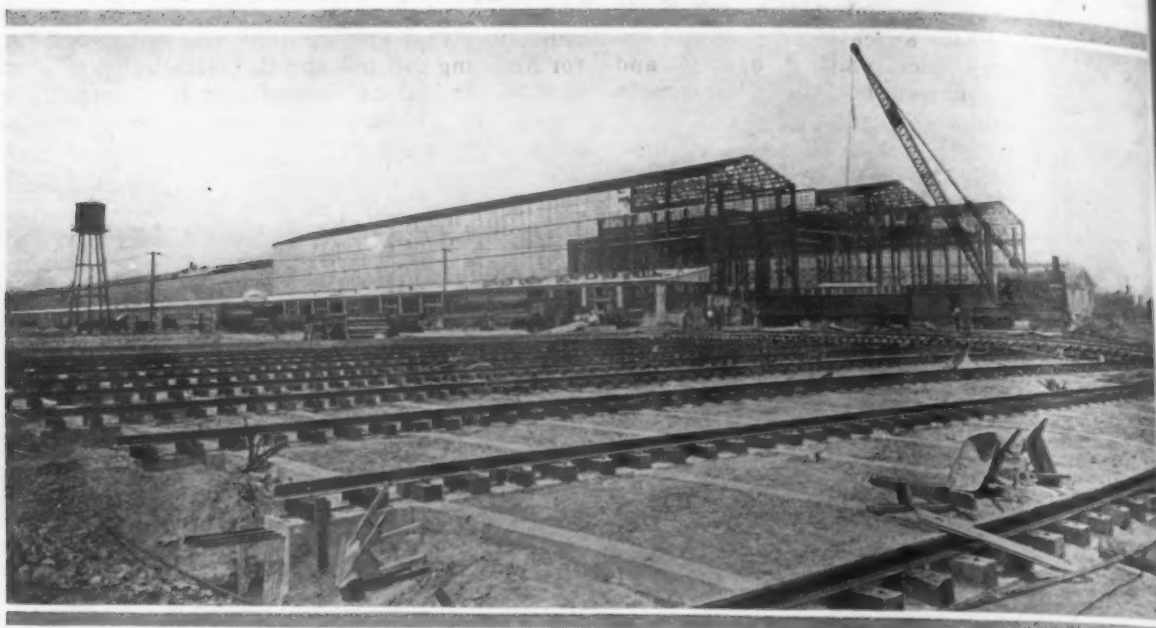
The great plant stands where less than five months before was idle ground, much of it marsh, a creek winding its way through the site. The course of the creek was changed, much driving of piles and filling was done, a main structure, 350 x 1700 ft., was built of steel and glass with composition roof; a fabricating shop 155 x 450 ft. was erected, to which 150 ft. more is being added; a great fit-out building was built, as was a transfer

table 202 ft. wide for the transverse movement of completed hulls; and a hydraulic launching machine which gently, and always under full control, lowers the ship into the water, was constructed. The Government dredged a channel three-quarters of a mile long from the river to the launching dock.

In keeping with modern manufacturing method, all operations on the Eagles are in proper sequence; material, and vessels as they grow, follow straight lines. In the great building, 1700 ft. long, the boats are assembled, 21 being under construction at one time. When they leave this building they are ready for the water, there to be towed to the bulkhead which adjoins the fit-out building.

Raw material is stored in a great yard, all piles of material being classified and designated by markers made of sheet metal, which are held on standards thrust into the ground. Thence, the material, consisting mostly of angles and plates, the latter varying from $\frac{1}{4}$ to $\frac{3}{8}$ in. in thickness, is taken to the fabricating building, where plates are sheared and bent on forms or in rolls. The templates are of steel. If heating is necessary it is done in oil-burning furnaces. Rivet holes in plates are punched with huge multiple-punching machines. At one end of the fabricating shop is a blacksmith shop, and at the other end a well-equipped machine shop.

From the fabricating shop the various shapes, now ready for assembly, are taken into the huge structure where ships grow. Every piece goes to the point where it is to be used. All material



In a Building 1700 Ft. Long, 21 of the Submarine Chasers Are Under Construction at One Time

is carried on trucks drawn by Ford tractors. Throughout the plant these tractors are ubiquitous; they haul material in every department; they pull the ships, as will be noted later; they haul dump wagons filled with earth, and actually seem restless for a task, despite all they are called on to do. At the end of the assembly building are numerous racks for holding supplies of parts, each ready to enter a ship. The unit system of construction is followed, that is, a bulkhead, or other integral part is assembled and then lowered into place by crane.

The 1700-ft. building has three great bays, on each side of which are smaller ones, these being used for the transportation of material. Down each large bay stretches a line of railroad track constructed of standard T rails. Each boat is assembled on a carriage supported by carwheels, there being 12 trucks, each with four wheels, or 48 wheels in all, under each carriage. Laid longitudinally on the trucks are 12 x 18-in. timbers, 12 to 20 ft. long; and on top of these are laid, transversely, shorter timbers, 10 x 12 in., and on

the latter the keel is laid. From this moment on, frames, plates and bulkheads, deck plating, chart house, etc., are rapidly applied, and a ship grows before one's eyes. Each stretch of track alluded to can accommodate seven boats, the three tracks together therefore having room for twenty-one, all constituting practically a mile of ships under construction.

The building of a boat comprises seven groups of operations, and they are so timed as to be finished simultaneously. When a ship moves out to the transfer table on its way to launching, those behind it move up in position for the next set of operations. Briefly outlined, these operations are as follows:

No. 1—Keel laid and bulkhead collars placed, also some of the floor beams, part of the longitudinal bulkheads, center and inner bulkheads. (Incidental riveting, of course, is a part of each series of operations, likewise reaming rivet holes and some welding.)

No. 2.—Floor built, and frames (of which there are 113) erected the entire length of the boat;



When a Ship Is Completed Ready for the Fitting Out It Is Hauled Upon the Transfer Table and Then Carried Sidewise to the Launching Stage

athwart-ship bulkheads, liners, keelson and floor stringers. Engine room, tank plating, platform deck beams placed fore and aft.

No. 3.—Forward deck plating, outside and after-deck plating, gunwale bar and collars, main deck beams, stanchions, engine and boiler room, crudder brackets.

No. 4.—Remainder of platform deck plating; bulkheads from platform to main deck, windlass and steam-engine foundations, signal room.

No. 5.—Deck bars and fittings, scuttle and manholes, water-tight doors and caulking.

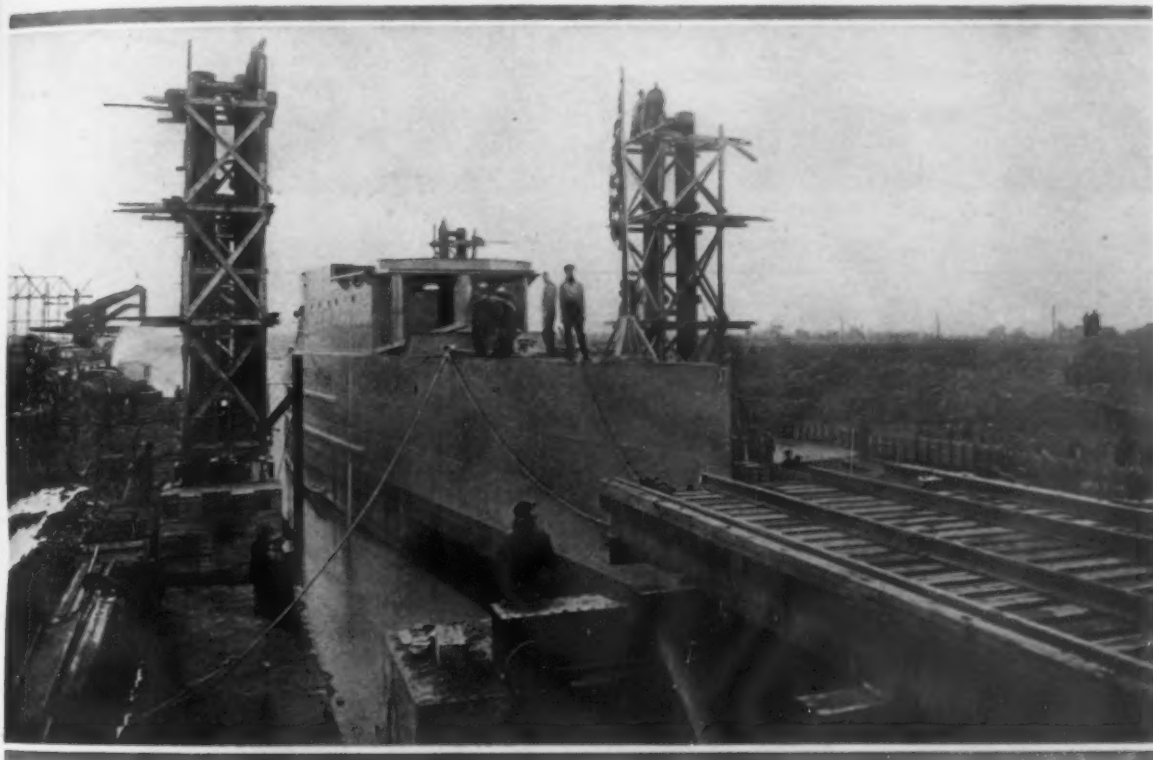
No. 6.—Forward and aft deck houses, breakwater, charthouse, strut and stern bearings, bilge and drain piping, oil compartment tunnel.

No. 7.—Seacock and strainer installation, steering gear and stuffing box, steering engine and anchor, ladder stairways, oil pumps, auxiliary pumps and air compressors. Installation of shaft and propeller. Riveting, welding and caulking

proper element, as the water is released from the cylinders. Afloat, the vessel is towed down the canal and tied up adjoining the fitting-out shop for finishing touches and the installation of armament. It is jealously guarded by the United States Navy, whose officers and experts have watched every move made in the construction of the ship and have tested it repeatedly, inspection being continuous. Eight boats can be fitted out at once.

The vessels have a sharp bow, the bow plates being bent over a steel form, other plates being rolled. About 200 tons of material enters each vessel before launching. They contain no wood. The sides of the boat are perpendicular, even the bow having no sheer.

Every air-tight compartment and oil tank is tested with 4 lb. of air before launching. Manholes, windows and openings for water-tight doors in the bulkheads, there being 13 of the last-named, are cut with oxy-acetylene in the assembly build-



The Launching Stage or Bridge Is Operated Hydraulically with Plungers at the Four Corners, and the Ship Is Floated in 32 Ft. of Water and Towed to the Fitting-Up Shop

completed, all compartments air tested, painting and inspection completed.

It is to be understood that the foregoing is but a mere outline of the work which goes into each operation.

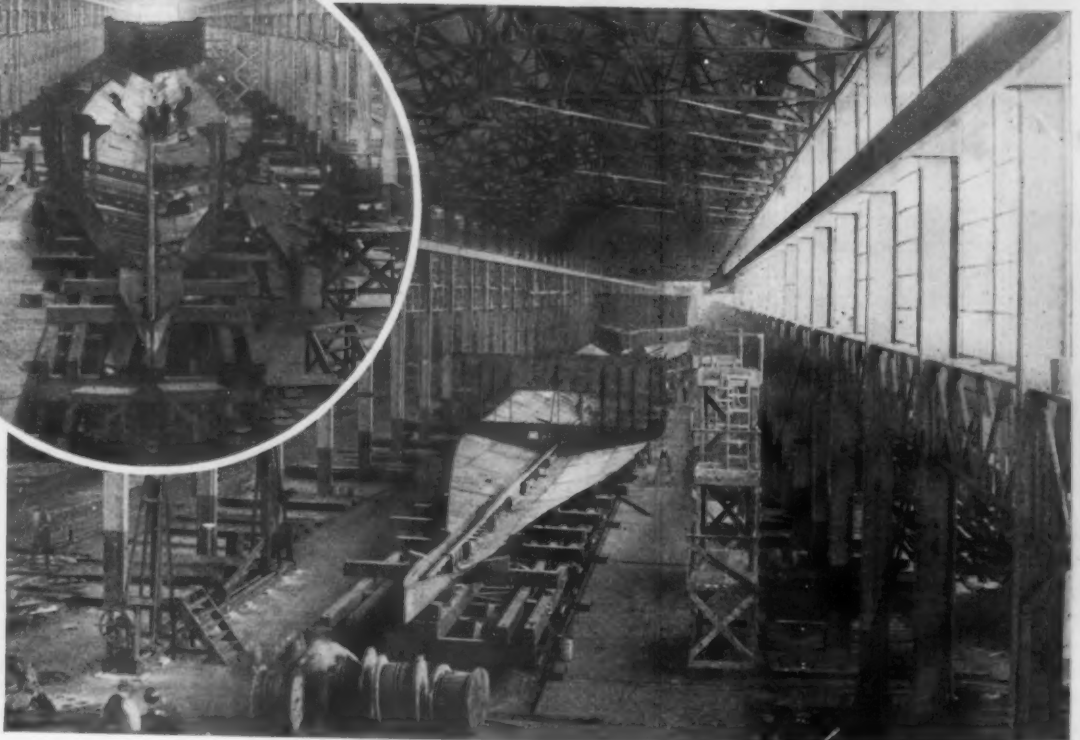
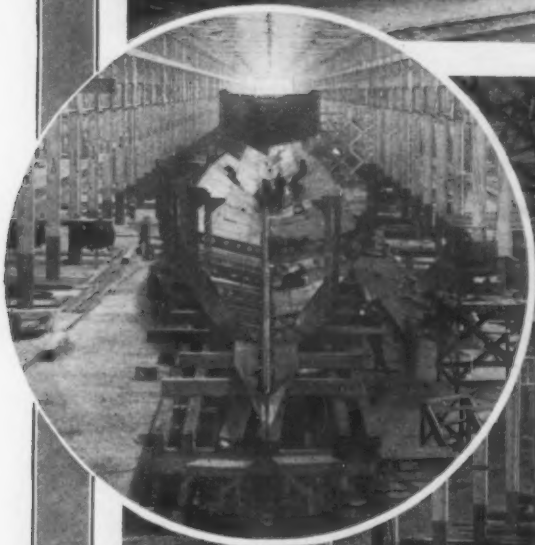
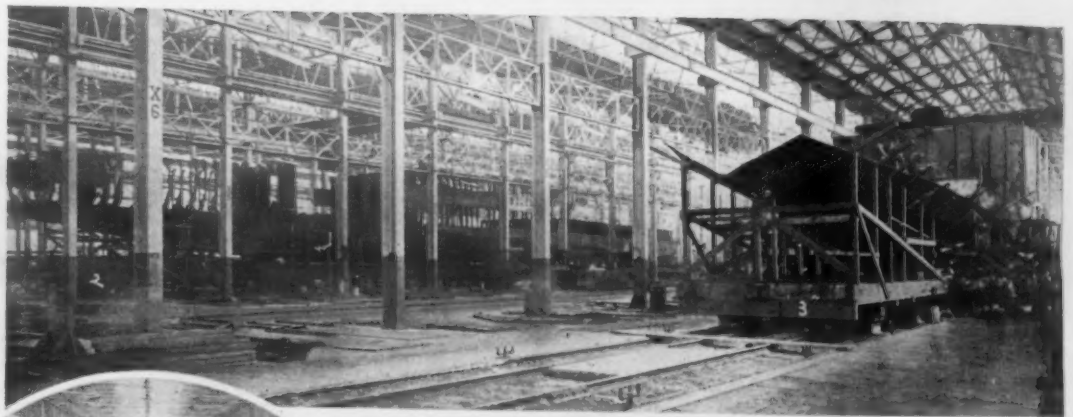
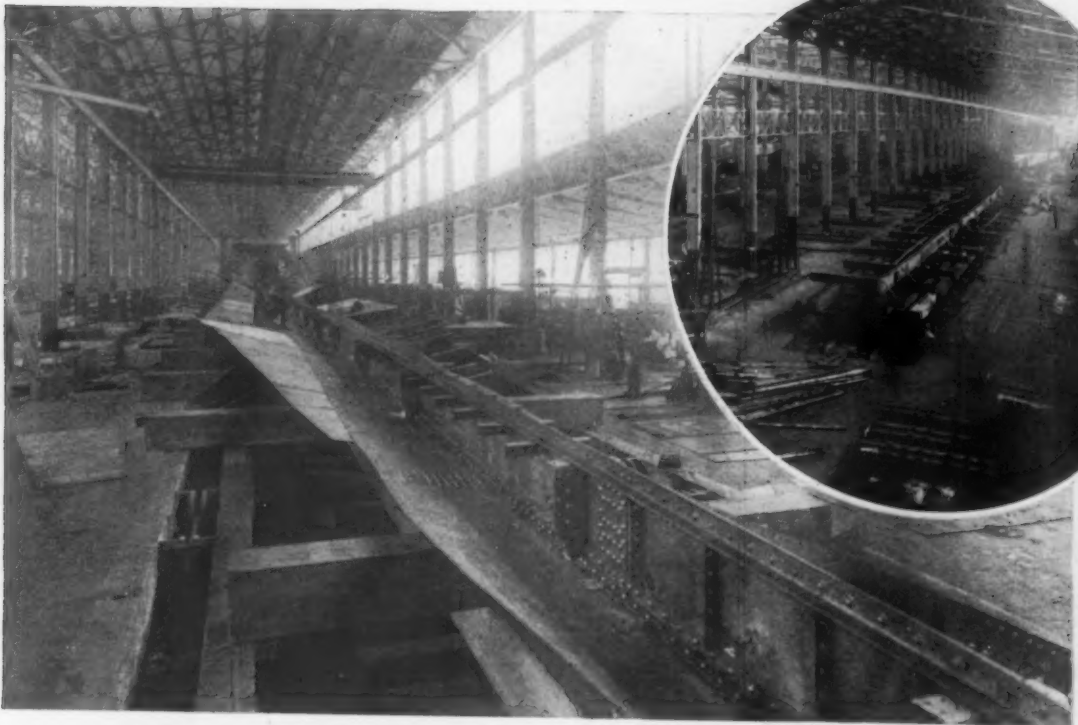
The transfer table, $31\frac{1}{4} \times 202$ ft., rests on a foundation of parallel concrete walls, on which are laid eleven heavy T rails. The table is electrically operated. Emerging from the assembly building, a ship is hauled over the table, then is carried across the face of the building in which it was built until it comes opposite the launching device.

Over a slip in which there is 32 ft. of water is suspended a bridge-like structure of steel, supported by four arms connected with plungers in four hydraulic cylinders, each 26-in. in diameter and 30 ft. high. Near by is a pumphouse for supplying the pressure to operate the plungers. Leaving the transfer table, a ship is again moved forward, this time running to and on the launching stage or bridge, there to descend easily into its

ing, this having been found the more practicable procedure.

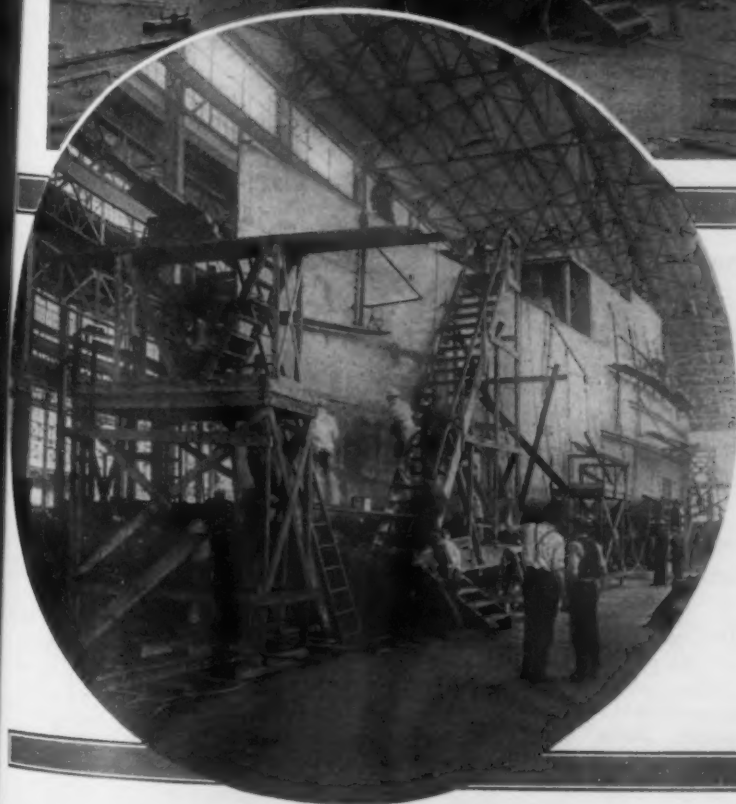
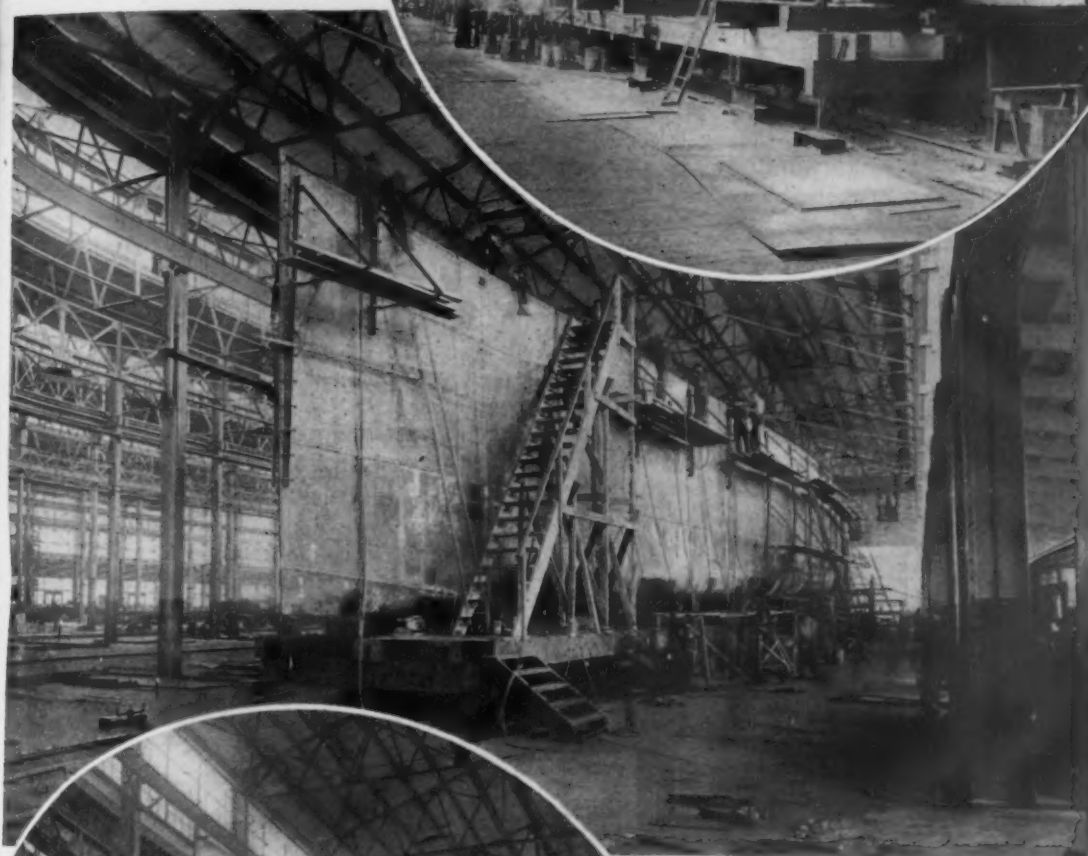
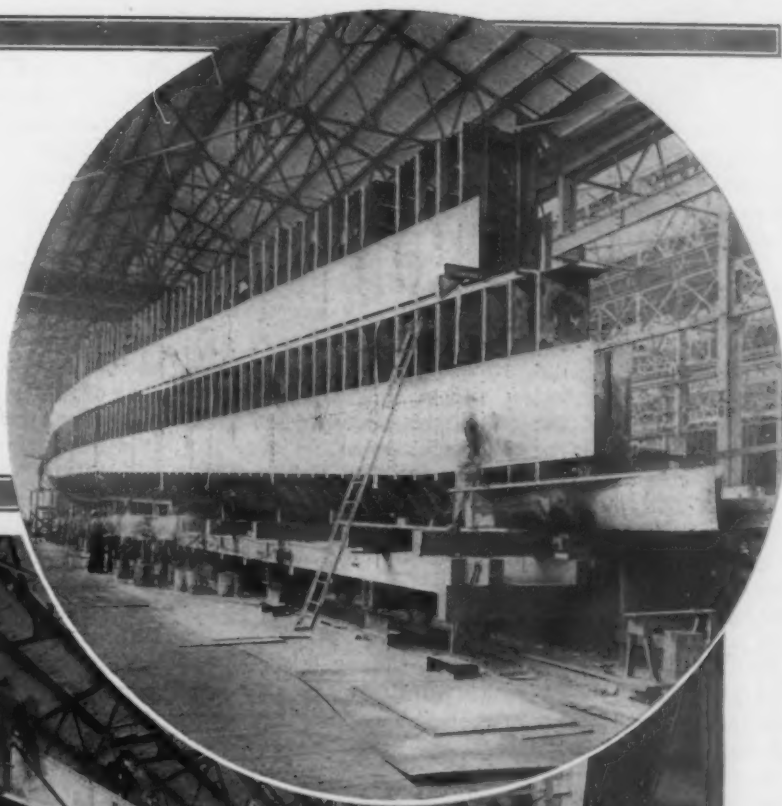
Much of the machinery used in the fabricating shop and elsewhere around the plant was evolved at the Highland Park works of the Ford Motor Co., the main factory of the company, where the turbine engines which are to propel the Eagles are being built. The first boat constructed was experimental, its parts being bolted together, so that it could be dismantled and reassembled permanently. The first seven vessels built enabled a checking up on all drawings, and the working out of a proper assembly procedure, including the synchronizing of the operations. The first boat was started before the assembly building was completed. Boilers were installed and in operation before the boilerhouse was built.

More should be said of the main building. Each of the three bays in which boats are assembled is equipped with three 5-ton electric traveling cranes, and more are going in, to make four in each line. At the end where operation 1 is done,



Manufacturing the Eagles

The Submarine Chasers Are Manufactured Like Automobiles in the Marine Department of the Ford Motor Co. Twenty-one are under construction at the one time in three parallel lines. A schedule of one per day requires that each line



move forward the length of one ship every third day. Then the completed ship in that line is forced out upon the transfer table and space at the rear of the line is obtained for laying the keel of the new ship. In other words, 21 days are allowed for assembling each ship and the work must be laid out so that definite construction steps occur in each position, which, to repeat, the ship holds for three days

each steel pillar carries a wall crane. The keels are laid on the floor, then raised by overhead cranes to the carriage. Skylights give ample light by day, while at night the entire building is illuminated by a mercury vapor system. The exterior of the building is brilliantly lighted at night, for in every department, save the material storage, work goes on 24 hr., the employees working in three shifts.

On a mezzanine floor extending across the operation 1 end of the assembly shop are the offices occupied by the shop managers and executives. The office walls, above the wainscoting, are entirely of glass and permit a clear view of the assembly building interior, and of the yard between that building and the fabricating shop. It is to be admitted that from this viewpoint, objects in the assembly structure are lost in the distance, so great is its length.

Throughout the plant every known labor-saving device is used in manufacture and assembly. An ingenious air jack supplies pressure for reamers, all holes being punched undersize and then reamed to size during assembly.

Of no less importance than the buildings and equipment in the gigantic undertaking is the matter of labor. On July 18, 4800 men were employed at the shipyard, and the number was then being increased at the rate of 150 a day, these men, of course, including all those on construction work around the plant, as well as those actually building boats. A spirit of enthusiasm prevails among the men, even the office boys being imbued with the spirit of hustle. Clever young engineers are much in evidence in all departments, and they are encouraged to think as well as to direct, as revealed by one little incident. With almost military precision and conciseness a young man stated a situation to his superior. The latter listened attentively. As soon as the younger man finished his statement his chief said "What is the solution?" Without an instant's hesitation the young man expressed himself as clearly and definitely as before. The quick response was: "Make out your order and I'll sign it." And, the question under discussion was no minor matter. Both men knew what should be done, the formality and official approval was necessary, but it consumed a minimum of time.

Men are being taken from the automobile plant at Highland Park, inasmuch as the work there is

letting down because of the smaller number of pleasure cars being manufactured. Each man in the shipyard has his clearly-defined duty. Men doing No. 1 work do that and nothing else, soon becoming skilled specialists, with the result that supervision is minimized. There is a department for instance, making nothing but bulkheads, and other for frames and another for chart houses. Throughout the ship, as may be surmised, all parts are standardized and are absolutely interchangeable. When a man is taken on he is questioned as to what he has done, what he would like to do, and his experience is measured to determine for what work he is best suited, all with the view of eliminating subsequent transfers, although these are provided for also. After a man has been at work a few days he receives a card (his work meanwhile having been watched) asking him if he is satisfied and if there is any reason why he should be placed elsewhere. Transfers from any cause are kept down to the minimum through these means. Another feature is that the organization is so maintained that every place is filled automatically should a man go elsewhere. Schools are maintained for teaching riveting, electric welding and caulking.

An inspection of the plant revealed no man standing or sitting around waiting for something to do. At the same time, as pointed out by an executive, there is no heart-breaking or nerve-racking work. The absence of lifting and carrying materials spells a lot.

The plant has a first-aid department, equipped with pulmotor and other accessories, but accidents are few, largely through the efficacy of a safety organization composed of men whose sole duty it is to be constantly on the watch for infractions of the rules, and to see where conditions can be bettered.

The plant is some miles from the center of Detroit, and to facilitate the movement of employees from the yard to the nearest street-car line the company has in service a line of motor buses, each of which pulls a trailer. No employee can gain admittance to the yard with his badge alone; he also must have his identification card, on which appears his photograph.

The shipyard buildings are for permanence. They stand not far from where the Ford blast furnace is being erected.



Motor Buses, Each with a Trailer, Carry Employees from Car Lines to the Ship Factory

A shipbuilding record which equals achievements in England and the United States was made at the yards of the Canadian Vickers, Ltd., Montreal, Quebec, when a 7000-ton cargo steamer, Samnanger, was completed 15 days after her empty hull had taken the water. Nine days after launching the machinery and boilers had been installed and were run under steam, and six days after that the vessel was ready for sea.

The Department of Commerce reports that it has received a dispatch from the American Consul General at Mexico City announcing the publication of a decree by the Mexican Government granting exemption from import duty to all mining and industrial machinery from Sept. 1. Such machinery was formerly dutiable at 0.02 peso per kilo, or \$0.45 per 100 lb. in American currency.

ELECTRIC STEEL DEVELOPMENT*

The Future from a British Viewpoint — Less Need of Swedish Material

BY DONALD F. CAMPBELL

The electric furnaces manufacturing steel in England are now producing about 40 times the pre-war output, and it is now possible to do without the large imports of Swedish iron and steel which were formerly considered necessary to maintain our output of high-class products.

Furthermore, the approaching exhaustion of the high-grade ores of Cumberland may be looked upon with equanimity, as electricity enables us to make use of the inferior ores of Cleveland and the Midlands to manufacture steel of great purity.

The value of the process is not yet appreciated in its broadest aspect, but it is probable that it will give new life to the basic-Bessemer process of Thomas and Gilchrist throughout the minette region of Lorraine, and cause the enormous deposits of phosphoric ores in Cleveland and the Midlands to be a vast source of pure steel, and possibly also phosphates for use as fertilizers.

Maximum Size of Electric Furnaces

The melting of steel is perhaps the most highly specialized application of the electric furnace at the present time, as the problems of constructing tilting furnaces and electrical apparatus suitable for the rough passage of steel works require considerable care and experience. The large currents produce many phenomena of great interest and some considerable complexity. The efficiency of steel furnaces is already probably within 5 to 10 per cent of the maximum which it will be possible to obtain unless some radical alteration is made in the method of applying heat, and the efficiency of large-size furnaces does not increase substantially as compared with those of medium capacity. The maximum size of furnace is likely to be not much more than 30 tons, and this size is only likely to be applied for refining liquid metal, or special purposes where large ingots are required. For the melting of cold scrap a 1500-k.v.a. furnace is as efficient as any, and 17 out of 53 furnaces of a well-known make erected in this country in 1917, and 60 out of 116 in another Allied country, were of this capacity.

The small acid-lined furnace equipped for fast melting for the manufacture of castings and high-grade tool steel has not been sufficiently applied, and the use of large basic furnaces for refining large quantities of liquid basic steel has been neglected in this country, as compared with other countries, where the output has reached large figures and furnaces of 25 to 30 tons are in regular operation.

Cost and Supply of Power

The questions of cost and supply of power are of great importance. The consumer and supplier of power in most districts are not yet sufficiently alive to the importance of close co-operation. The consumer is too often inconsiderate and does not appreciate the importance of maintaining a high load factor and reasonably even load. The supplier is frequently unreasonable about small fluctuations, which should have no deleterious effect on a properly protected and looped system which is provided with a reasonable margin of power. After the war, manufacturers will have to work on a smaller margin of profit than at present, and one method of reducing costs will be by the regulation of large batteries of furnaces to work with a maximum demand far below the aggregate of the transformer capacities, which will result in great economy, if the consumer and the supplier of power will co-operate as they should.

An automatic regulator can be applied on the main supply cable entering a consumer's works to insure control by what may be called a master regulator, as its control is effected by varying the resistance in the local

adjusting circuit of the individual regulators on the furnaces. Thus, for example, if 10 furnaces of 2000 k.v.a. capacity each be connected in a supply system by one consumer, the maximum load might be controlled so as not to exceed 15,000 k.v.a. instead of the 20,000 k.v.a. capacity of transformers installed, and no appreciable loss of production should result, as the cycle of operation is such that the melting requires full load and the refining and teaming period an average of less than half load.

It is desirable that furnaces should be emptied consecutively at regular intervals to facilitate the working of cranes, ladle and general shop traffic. Thus the master regulator can be set to control the total load at 12,000, 15,000, or any other total load that may be required to meet special circumstances, provided the furnaces have sufficient power for reasonable working. This is of paramount importance, and the metallurgist must always control the electrical engineer to a great extent. Such a system, which can absorb a certain margin of power whenever it becomes available, will reduce the cost of the electric energy to a great degree.

Water or Steam Generated Power

It is probable that in many cases the actual cost of a kilowatt-hour of water power used in a steel furnace having a load of about 45 per cent is little less than the cost of our best coal-fired generating stations. The manufacture of aluminum, ferroalloys, carbide and nitrates gives an exceedingly high load factor, and is consequently suitable for water-generated electricity, but the average steel furnace does not exceed 40 per cent. This militates against water-power owing to its high capital expenditure and low running cost, and favors steam-generated power with its comparatively low first cost and high running charge.

As in the case of most metallurgical processes, such as the Bessemer, Siemens-Martin, and blast furnace, a limiting size is reached beyond which no economy results and great difficulties begin and increase rapidly. These limits are now fairly well established, and future improvements in electric furnaces are to be sought principally in mechanical and electrical details. The future development of the industry depends largely on a broader viewpoint on the part of the power-producing companies, with a resulting reduction in the cost of current, and a wider appreciation on the part of our chemists and metallurgists of vast possibilities of intense heat in a neutral atmosphere.

Electric Steel After the War

The question of utilizing electric furnaces after the war is giving great anxiety to some manufacturers, as the large supplies of turnings from the shell factories will no longer be available. There is no doubt, however, that many electric furnaces will compete successfully with basic open-hearth furnaces in the market for miscellaneous scrap collected throughout the country, which will be refined and replace Swedish imported steel. The principal competitors of the scrap-melting electric furnaces in the Midlands will probably be found in those refining liquid steel on the North-east Coast. In any case, Scandinavian imports will practically cease and the high-class steel industry in Britain will be self-supporting.

A process for spraying metals upon any kind of surface, using metal melted in an electric arc and blown by means of gas jets to the surface to be covered, according to *The Engineer*, London, was described in the *Zeitschrift für angewandte Chemie*. The metal to be sprayed forms one of the electrodes of the arc, and the gas jets are directed so as to strike the sides of the metal electrodes without impinging on the arc and blowing it out. If the arc is produced between two electrodes, one being metallic, and a stream of non-oxidizable gas is directed onto the electrode, portions of the electrode that are melted will be carried away in the form of a fine spray, and may be deposited on any surface on which they impinge, thus forming a metallic skin on it. Suitable control apparatus is provided to allow for the wear of the electrodes.

*A contribution to a recent issue of the *London Iron and Coal Trades Review*.

Exemption for Indispensable Key Men

Employers Urged Not to Ask That Others Be Excluded from Military Service—General Crowder Explains Application of "Work or Fight" Order

WASHINGTON, Sept. 17.—The important work of exempting for the industries of the United States the millions of registrants under the new draft ages, whose presence in the factories is as important as their work in the trenches, is now under way. For the registrants between 32 and 45 years of age, this task is a monumental one, for Provost Marshal General Crowder has estimated that only about 6 per cent of these will be put into the Army.

There has been some conflict in the various statements that have been issued in Washington concerning "essential occupations." It had even been reported, and that on good authority, that the War Industries Board's preference list would be used in interpreting the "work or fight" order. If that had been done, it would have caused a serious situation for all of the industries not in that list.

General Crowder, however, has definitely declared that this will not be done. As the situation now stands, the deferments in classification will be made about as follows: Men with dependents will be given deferred classification for such dependents unless they are in the five "non-productive" occupations to which the "work or fight" order of last May specifically applied. If they are in an essential industry, however, so much the better for them. Men without dependents will be given deferred classification if they are in war-essential industries and can demonstrate—or it can be demonstrated for them—that they are essential to these industries. Men without dependents, however, will find it more difficult to demonstrate this essentiality than those who have families to support. Both General Crowder and Chairman Baruch of the War Industries Board have appealed to the employers of labor to take an active part in aiding in this important work of exemption. Chairman Baruch has appealed to the employers, however to ask exemption for no worker who is not indispensable.

First Duty of Industry

"The first duty of the industrial establishment," he said, "is to bring about the needed increment of manpower in the Army. The second duty is to protect the industrial establishments which are essential to supplying the soldiers with the tools of war. The War Industries Board directs the attention of industrial America to the fact that it has a highly important part in making the operation of the draft law successful. The first thing to do is for each employer of labor to thoroughly familiarize himself with the details of the law. The next is to make it a matter of honor to ask for industrial exemption for the lowest possible number and only for the indispensable key men. By observing these two points the duty to the Army and the duty to the Army's supply source will be discharged."

General Crowder issued an important statement to clear up the misunderstanding that had been created by the discussion of "non-productive" occupations and "non-priority" industries, as follows:

"An erroneous impression is current that the 'non-productive' list of occupations contained in the Provost Marshal General's 'work or fight' regulation of last May corresponds to the group of industries omitted from the 'preference list' announced by the chairman of the War Industries Board on Sept. 9. Because the former list was brief, only five classes of occupations, while the latter group is very large, including all industries except the 70 priority classes enumerated, and because the announcement of Sept. 9 stated that the 'preference list' is the 'basis for industrial exemption from the draft,' some persons have formed the impression that the small list of five 'non-productive' occupations has suddenly been enlarged by the Provost Marshal General to in-

clude the extensive group of industries omitted by the chairman of the War Industries Board.

Non-Productive List Not Enlarged

"The impression that the 'non-productive' list has been enlarged at all, and particularly that it is identical with 'non-priority' industries, is so erroneous and misleading that it calls for prompt repudiation. The 'non-productive' list of five classified occupations has not been enlarged, and it will not be enlarged without the amplest and most explicit notice. Selective service boards are expressly directed, until further notice, to bring no other occupation under the 'work or fight' order, except those expressly listed.

"What, then, is the distinction between these two groups? The War Industries Board is charged with determining the principles upon which fuel, power, transportation, materials, capital and labor ought to be allocated to the several industries most essential to the war program. An industry omitted from that list is therefore, in the position of not being entitled to a priority privilege. The relation of that list to the Selective Service System is that an industry included in it is thereby recommended to the district boards as being a "necessary" industry; and the district boards may take advantage of that recommendation in determining whether an indispensable man in such an industry should be placed in a deferred class on that ground.

Many Not Essential

"But there are, of course, many scores, perhaps hundreds of industries not positively essential to the war program nor to the maintenance of national interest during the emergency. In those industries are, or will be, millions of registrants deferred on grounds of dependency and many others in class I without deferment. At this point the 'work or fight' order comes into play, but to only a very few classes of occupations—five in all—expressly enumerated in that order and to a relatively small number of individuals. Among this extensive and unlisted group of 'non-priority' industries, it finds a very few which it designates as 'non-productive,' meaning in general those occupations in which the man-power within draft age could better, during the emergency, be replaced by woman's work or by older men or boys. The policy involved is that those men of draft age would serve the country best by getting out of those occupations, either into the military forces or into some other occupation. Now, this other occupation may be in a priority industry or in a non-priority industry. The 'work or fight' order does not prescribe any occupation for them to get into. There are plenty of non-priority industries to get into; though naturally they would do well to seek out a priority industry, if one is available. But the 'work or fight' order does not attempt to dictate on that point; it merely gives them the option of getting out of the 'non-productive' occupation or of losing the benefit of their deferred classification or their high order number.

Top and Bottom of Scale

"Thus the War Industries Board is concerned merely with strengthening the priority position of a limited number of industries at the top of the scale, so to speak, in relation to war needs; while the Provost Marshal General's regulation is concerned mainly with strengthening the Army by taking the registrants who choose to stay in a small number of occupations at the bottom of the scale. The whole range of occupations in between the two lists remains open to receive those who may leave the five occupations named in the 'work or fight' order.

"Lawyers, for example, are not mentioned in the 'preference list'; hence a lawyer could presumably not

obtain a priority order for the transportation of a set of office furniture. Nor are lawyers mentioned in the 'non-productive' list; hence, a lawyer deferred on grounds of dependency does not have to give up his occupation in order to retain his deferment. On the other hand, poolrooms are not on the 'preference list,' while they do appear in the 'non-productive' list; hence a registrant poolroom keeper not only could not obtain a priority order for the transportation of his poolroom furniture, but he must either go into some other occupation or lose his deferment, if any.

"The two groups, 'non-priority' and 'non-productive,' therefore, not only are directed to different purposes but they are not identical and presumably never will become identical. Certainly the public is entitled to understand that no additions will be made to the 'non-productive' list without ample and explicit notice."

W. L. C.

Horsepower Pull of Belts*

BY W. F. SCHAPHORST

Last year the writer developed a belt chart that was printed in THE IRON AGE of Sept. 6, 1917. The chart has now been simplified. All one has to do is to measure the pulley diameter, take its speed, decide on a width of belt or ply of belt, and the horsepower is immediately determined.

The dotted line drawn across the chart shows how to zig-zag across from left to right or from right to left, as the case may be. For example: What horsepower may be transmitted by a single leather belt whose width is 5 in. from a 20-in. pulley making 300 r.p.m.? Connect the 5 (column A) with the 300 (column B) and locate the intersection of the extended line with column C. From that point of intersection line through the 20 (column D) and locate the intersection with column E. Now connect that point of intersection with the word "single" in column G, and the point where the line crosses column F gives the horse power. The answer, as may be readily observed, is about 9.8 hp.

It is obvious that the range of the chart is wide enough to care for every ordinary belt condition. The belt widths include everything from 1 to 60 in. Speed ranges from 3 to 9000 r.p.m. Diameters include everything from 2 to 1000 in. Horse power ranges from 4 to 200, and belt thickness varies from single to 4-ply.

Let us suppose, now, that it is thought best to use a "light double" belt in the above installation rather than a single. What would the belt width then be?

Beginning with the words "light double" at the right hand side, one would zig-zag through the known points to the left and find that the chart gives 3.8 in. as the answer in column A. Therefore, a 4-in. belt would be selected.

This chart is based on well-known and much-used rules of thumb advocated by manufacturers of belts and used by the buyers.

Iron Ore in Bavaria

The production of iron ore in Bavaria was very important in the middle ages, but later was driven out by Westphalian and other pig iron. Lately the industry has been revived, and Bavaria now ranks fourth among the iron ore producing states of Germany. According to a recent report, the output rose in the 10 years 1904 to 1913 from 180,342 to 485,254 tons, of which 473,498 tons were smelted in Bavaria. The supplies of iron ore which will be available within a measurable period of time, and which are chiefly in the Upper Palatinate and Upper Franconia, are estimated at 150 to 200 million tons.

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How British Hollow Shafting Is Made

For the drum mounted free upon the shaft, the idler pulley, the ball race and for similar purposes hollow shafting, it is claimed, offers attractive possibilities because it renders lubrication from within the shaft a simple proposition, it being merely necessary to supply the lubricant under pressure to the hollow portion and deliver it through holes to the bearings.

Briefly, the British method of production at the plant of Dunford & Elliott, Ltd., Sheffield, England, is as follows: Assuming the finished article required to be a 1½ in. shaft 22 ft. long, with a ¾ in. hole bored throughout its length, a billet 17 in. long by 4-in. square section is drilled through its length with a 1½ in. hole. A piece of steel is then electrically welded into one end, the bore filled solid with cement, and the top hole closed with a further piece of steel welded in, the billet being then sent to the mill to be rolled down to the required section. After rolling, the ends of the bar are cut off and the cement cleaned out on a special machine. Upon this machine the shaft is rigidly held, and a metal tube, delivering compressed air at a pressure of 1200 lb. per sq. in., is automatically fed down the hole, the time required to clean such a shaft being about two minutes. As the cement is cut out in the

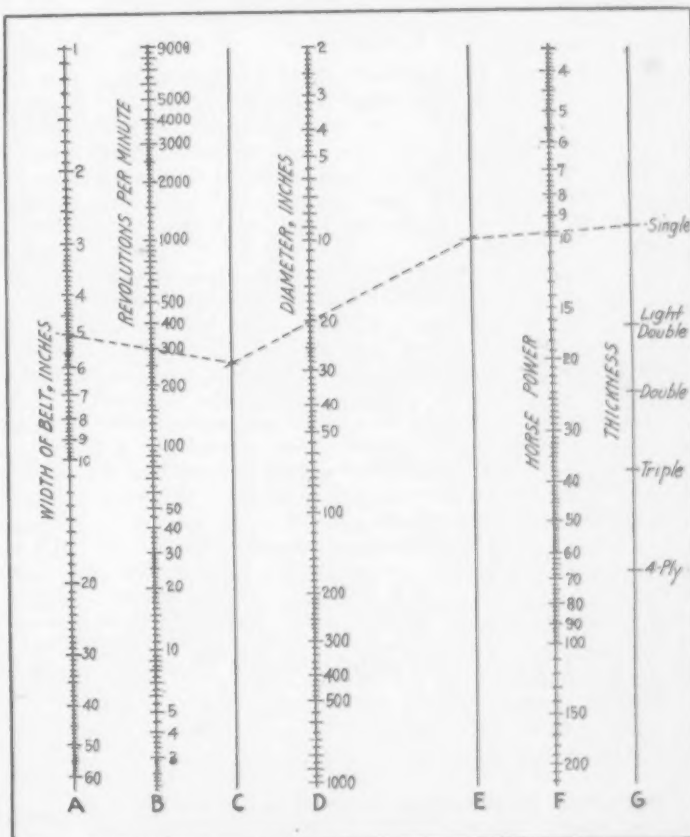


Chart for Quick Determination of Horsepower Pull of Belting

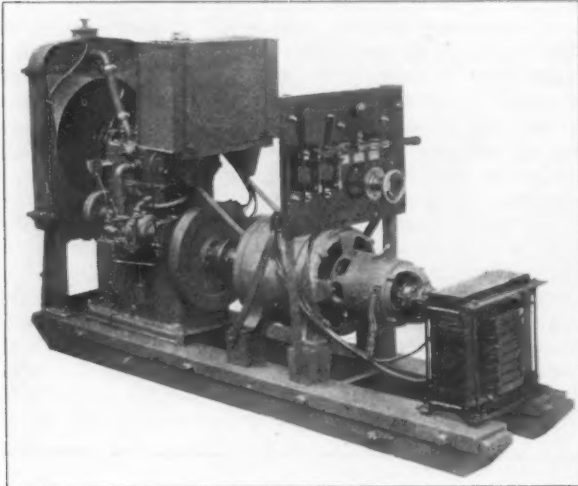
form of a fine dust and delivered at the front end of the hole, it is caught up by a suction fan and delivered into a hopper below the shop floor, to be afterwards carted to the tip. This arrangement is thoroughly efficient, the shop being entirely free from dust.

Within very wide limits almost any size of shaft can be produced by this process. On a broad basis the amount of steel to be removed to form the hole is 10 per cent. of the total weight of the shaft, and while it is not advisable to exceed it, this amount, especially in the case of large shafts, can be considerably reduced, if necessary. The process is being employed to manufacture bars from ½ in. in diameter with a 3-16 in. hole up to 6 in. in diameter and with holes of varying sizes. There are no limitations to the length other than those of rolling.

Freyn, Brassert & Co., Peoples Gas Building, Chicago, have been retained as consulting engineers by the Belfont Iron Works Co., Ironton, Ohio.

Portable Arc Welding Machine

A new type of portable arc welding machine that is gasoline driven has been brought out by the Lincoln Electric Co., Cleveland. The welder is designed for use in shipbuilding and ship repair work for oil pipe line work, for general commercial work or in any



Portable Electric Arc Welding Machine Complete with Generator and Gasoline Engine

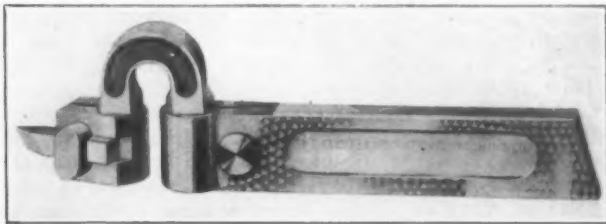
place where electrical current is not available. The machine is mounted on a skid for convenience in moving around, and can be placed on a motor truck, shop truck or other vehicle for transfer from one location to another.

The complete welding unit consists of a Winton gasoline engine, a standard Lincoln motor, generator, an arc stabilizer and a control panel. The photograph shows the arrangement of the machine, the radiator being at one end and the gasoline tank directly above the engine. The engine is started by a crank in front of the radiator. The control panel on which knife switches are located is placed above the motor.

The engine motor and generator are direct connected. This is a variable voltage machine, its voltage ranging from 20 volts no load to 50 volts with load, and it provides 150 amp. welding current. The stabilizer is a highly inductive low resistance coil connected to the welding circuit. This serves to correct momentary fluctuations in the current. The welder itself is virtually similar to the standard Lincoln arc welder designed for general use where electrical current is available.

A New Tool Holder with Spring Head

For taking finishing cuts on metal parts, the Cleveland National Machine Co., 1366 West Seventieth Street, Cleveland, has brought out a tool holder with a spring head. The holder in appearance resembles a forged goose-neck finishing tool, but it is pointed out possesses the feature of adjustability to angles on either side of the center line of the holder and provision for using various forms of tool steel bits. Among the operations which the holder is designed to



The Use of a Spring Head and an Adjustable Tool Clamp Enables the Tool to Be Set at Varying Angles with the Body of the Holder for Performing Different Finishing Operations and Eliminates Chatter

handle are broaching, cutting-off, forming, grooving, cutting keyways, tapping, turning and thread cutting.

The holder consists of the holder shank, the spring goose neck and an interchangeable invertible clamp in which the inserted steel cutter is mounted. The use of the swivel goose-neck connection between the holder proper and the tool clamp enables the tool to be adjusted at any angle up to 90 deg. on either side of the holder and since the clamps for the tools are reversible, it is possible to place the tool on either side of the holder as well. Three tool clamps are furnished for handling flat stock measuring $\frac{1}{4}$ x 7 16 in., rounds from 3/16 to 5/16 in. in diameter and square stocks measuring 5/16 in. on a side.

A Floating Head Type of Water Heater

A water heater of the instantaneous type for which the elimination of tube breakage is claimed has been brought out by the Alberger Pump & Condenser Co., 140 Cedar Street, New York. This heater is designed for use wherever hot water

is required in large quantities and exhaust or live steam is available for heating purposes. It is of the water tube type in which the water flows through the several passes of tubes while the steam surrounds the tubes. A so-called floating head is provided to take care of the expansion of the tubes due to intermittent service and is relied upon to eliminate the likelihood of the tubes breaking. It is pointed out that the rate of heat transmission is higher with this type of heater than in one where the steam flows through the tubes, thus permitting the use of a smaller heater with corresponding reductions in the amount of space required and the initial and installation costs.

The shell, tube heads, water channel and covers are castings, thus assuring the elimination of corrosion to a great extent, while the tubes are straight pieces of brass which tends to reduce the friction loss. The use of straight tubes, it is explained, avoids the necessity of removing any but the damaged one when replacements are necessary. This is further facilitated by the use of a separate water channel which also provides ready access for cleaning without breaking any pipe connections.



The Use of a So-Called Floating Head to Take Up the Expansion of the Tubes and Thus Eliminate Breakage Characterizes a New Instantaneous Water Heater for Industrial Plants

Farm Gas Engine Eliminations

At the request of the conservation division, War Industries Board, the National Implement & Vehicle Association brought the manufacturers of farm internal combustion engines together at the Auditorium Hotel, Chicago, on Monday, Sept. 9, to consider what eliminations might be made as a war conservation measure.

A representative attendance of the industry was present and agreed upon recommendations as to the number of sizes to which each manufacturer will limit his production. The meeting suggested also the date when the eliminations should become effective. The report of the meeting will be filed with the conservation division. Details of the farm-engine manufacturing schedule will probably be announced when the War Industries Board hands down its rulings to be observed by every manufacturer.

Fuel Economy in Blast Furnaces*

Cleaning the Ore and Size of Bell Factors in
Larger Output and Lower Coke Consumption in
British Practice—Long Life of Furnace Walls

BY T. C. HUTCHINSON

THE Skinningrove Iron Co.'s blast-furnace plant consists of five furnaces, each 82 ft. high, 23 ft. diameter at throat, and 26-ft. bosh, and six blowing tuyeres. The two original furnaces have 8-ft. hearths, and Nos. 3, 4 and 5 have 10-ft. hearths. Nos. 1 and 2 were built by the Loftus Iron Co. and blown in by them on Oct. 17, 1874. Both furnaces were damped down on May 23, 1877, when the Loftus company went into liquidation. These two furnaces were acquired by the Skinningrove Iron Co. in 1880, and were blown in on the original lining in September, 1880.

No. 1 furnace was blown continuously by the Skinningrove company from September, 1880, until Dec. 31, 1900, on the original lining. No. 2 was blown in in October, 1874, and continued blowing to May, 1877, and then again from September, 1880, until April 14, 1903, a further period of 22 yr. and 1 mo. on the original lining, a total life of one lining of 25 yr. and 2 mo. Nos. 3, 4 and 5 were built by the Skinningrove Iron Co. with 10-ft. hearths. No. 4 was lighted up Oct. 6, 1895, and is still blowing on the original lining, after a period of 22 yr. and 3 mo. No. 3 was lighted up on Jan. 22, 1896, and is still blowing on the original lining, a period of 22 yr. No. 5 was lighted up on Nov. 9, 1901, and was blown out on July 10, 1915, and is now being relined. The furnaces blowing at this date are Nos. 1, 2, 3 and 4.

The following is the life of each furnace lining, and make of iron on original lining:

No. 1 Furnace

October, 1874, to May, 1877, 2 yr. 7 mon.; make in tons 49,162
September, 1880, to December, 1900, 20 yr. 3 mon.; make in tons 562,815
Life of lining, 22 yr. 10 mo. 611,977

No. 2 Furnace

October, 1874, to May, 1877, 2 yr. 7 mon.; make in tons 50,524
September, 1880, to April, 1903, 22 yr. 7 mon.; make in tons 625,362
Life of lining, 25 yr. 2 mon. 675,886

No. 3 Furnace

January, 1896, to January, 1918, still blowing on original lining.
Make to January, 1918, 769,900 tons.

No. 4 Furnace

October, 1895, to January, 1918, still blowing on original lining.
Make to January, 1918, 747,674 tons.

No. 5 Furnace

November, 1901, to July, 1915:
Life of lining, 13 yr. 7 mon.
Make of iron, 518,257 tons.

At the May meeting of the Iron and Steel Institute in 1908, I presented a paper on the "Mechanical Cleaning of Iron Ore," and the fuel economy resulting therefrom. *Journal of the Iron and Steel Institute*, No. III, 1908, pp. 38-58.

Cleaning Iron Ore at the Belt

In the present paper I propose later to consider the conditions in the blast furnaces that secure such long life of furnace lining, and the fuel economy resulting therefrom; but at the moment I will confine my remarks to the importance of effectually cleaning the iron ore at the belt, for this question is altogether apart from that which relates to the life of furnace linings, and by either means fuel economy can be effected independent of the other.

Ten years have elapsed since 1908, when I presented

the paper referred to. The experience of these 10 years has confirmed the figures I reported in 1908. From that date, careful attention has been given to secure the rejection at the belt of all impurities that could be mechanically treated.

A check sorting bench was established near the furnaces quite apart from the cleaning belt at the heapstead. Each week two cars of iron ore have been taken from the trains, after leaving the cleaning belt, and these have been re-sorted by hand, putting impurities aside that had passed the belt. The clean ore from the sorting bench was then analyzed, and the percentage of metallic iron in the clean ore ascertained and the consumption of iron ore per ton of pig iron produced in the blast furnaces, compared with the report from the cleaning belt. These comparisons were made each month.

The metallic iron in the pig iron as received from the blast furnaces was taken at 92 per cent., this being based on average analyses entered in the laboratory report.

Samples of No. 3 Foundry and Forge Pig Iron. Average Analysis

	Per Cent		Per Cent
Graphitic carbon ...	2.950	Manganese	0.550
Combined carbon ...	0.473	Arsenic	0.027
Silicon	2.320	Chromium	0.063
Sulphur	0.049	Metallic iron	91.998
Phosphorus	1.570		

The comparison instituted was as below:

If 20 cwts. of pig iron contained 92 per cent metallic iron, iron ore containing 27 per cent metallic iron should require 68.14 cwts. of ore to produce 20 cwt. of pig iron.

Thus: 92 per cent \times 20 cwts. = 1840 \div 27 per cent metallic iron in iron ore = 68.14 cwts. of ore, and the converse—92 per cent \times 20 = 1840 \div 68.14 = 27 per cent of metallic iron in iron ore.

The actual consumption of iron ore in the furnace for the last 10 years has been:

Year Ending Dec. 31	Iron Ore, Cwts. per Ton of Pig Iron	Percentage of Metallic Iron in Iron Ore
1908.....	68.329	26.92
1909.....	70.249	26.19
1910.....	69.71	26.39
1911.....	69.78	26.36
1912.....	70.08	26.25
1913.....	69.32	26.54
1914.....	70.84	25.97
1915.....	70.45	26.11
1916.....	70.09	26.25
1917.....	70.31	26.17

For more than 20 years we have analyzed every cast of pig iron produced at the blast furnaces. The low sulphur content has proved that the sulphur band

Analyses of Blast-furnace and Mixer Metal and the Resulting Steel

Hot Metal Charged		Mixer Metal		Steel Made			
Silicon, Per Cent	Sulphur, Per Cent	Silicon, Per Cent	Sulphur, Per Cent	Carbon, Per Cent	Sulphur, Per Cent	Phosphorus, Per Cent	Manganese, Per Cent
3.29	0.024	0.56	0.034	0.45	0.050	0.070	...
3.16	0.030	...	...	0.44	0.050	0.046	0.69
2.30	0.044	...	...	0.42	0.045	0.037	0.74
3.39	0.025	0.87	...	0.20	0.053	0.045	0.69
3.15	0.024	...	...	0.20	0.045	0.040	0.77
3.01	0.028	...	...	...	...	...	...
2.49	0.038	0.56	...	...	...	...	...
2.87	0.036	...	...	...	...	...	...
2.96	0.050	...	...	...	...	...	...
2.72	0.023	...	...	...	...	...	...
2.77	0.036	0.47	...	...	...	...	...
2.91	0.033	0.47	...	...	...	...	...
3.01	0.041	0.42	0.035	...	...	...	...

Average of sulphur = 0.033 in molten iron.

Average of silicon = 2.91 in molten iron.

brought with the iron ore from the mines can be mechanically removed at the cleaning belt.

The average analyses for silicon and sulphur from 1895 to 1906 were: Silicon 2.80 per cent and sulphur

*From a paper presented at the spring meeting of the Iron and Steel Institute in London, England, May 2, 1918. The author is managing director, Skinningrove Iron Co., Ltd., York, England.

0.033 per cent in the No. 3 iron, and silicon 2.53 per cent and sulphur 0.051 per cent in the foundry No. 4 iron.

In 1908, the date of my paper, we had no steel works. Nearly our entire make of pig iron was sold to Scotland. In 1911 we used part of the iron as molten iron for manufacture of steel, and then realized the importance of low-sulphur iron for that purpose. At this date, Jan. 15, 1918, I have before me the analyses of molten iron sent to the steel-melting shop that day, which is as

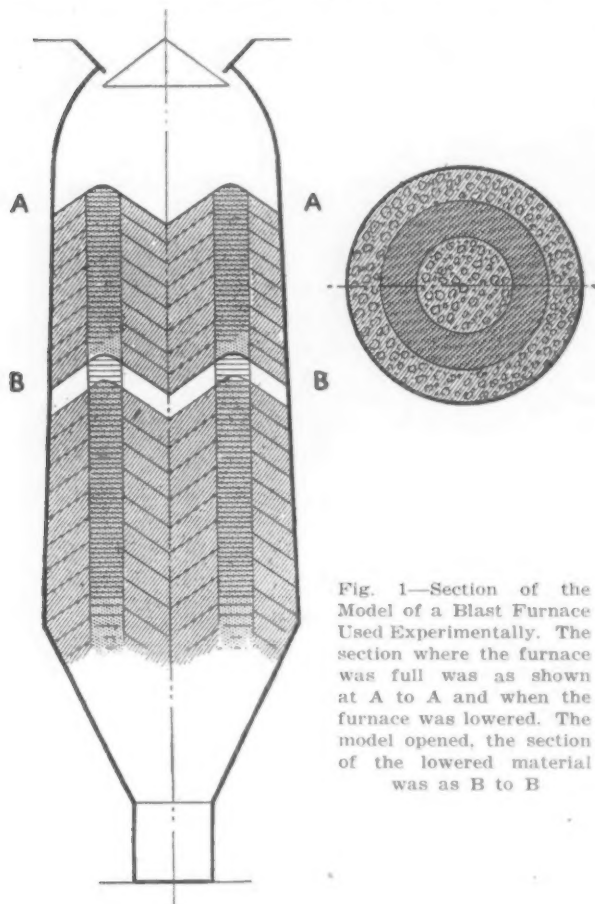


Fig. 1—Section of the Model of a Blast Furnace Used Experimentally. The section where the furnace was full was as shown at A to A and when the furnace was lowered, the section of the lowered material was as B to B

below. Out of 13 consecutive casts from the blast furnaces that day, 13 ladles of molten iron of about 30 tons each, or a total weight of metal of 390 tons, analyzed as shown in the accompanying table.

Such low-sulphur pig iron could not have been produced if the sulphur band in the iron ore had not been mechanically removed at the cleaning belt.

Factors in Fuel Economy

Fuel economy results partly from rejection of impurities before the iron ore is charged into the furnace and partly by equal distribution and admixture of the mine, coke and limestone in the furnace itself. The working of Nos. 1 and 2 furnaces in 1881 (the first full year of the Skinningrove Iron Co.'s operations) was not satisfactory to the management. The respective makes were: 1881, No. 1, 22,799 tons; 1881, No. 2, 23,472 tons; as compared with 24,985, the average make for that year of all Cleveland furnaces. The iron produced was mainly forge.

Neither the works chemist nor the furnace manager could suggest a remedy. It was imperative that one should be found, and for that purpose a model of the furnace was prepared and made exactly to scale (1 to 48). The charging bell was made to the same scale (13 ft.). A slide was fixed at the bottom of the model so that charges could be withdrawn during the time the model was being filled. This model was cut vertically into two equal portions and each half sheeted with glass so as to give two closed compartments when opened for examination.

Experimental Model of a Furnace

The material to be charged into the model was broken to the same scale as the model. The iron ore was broken into cubes $\frac{1}{4}$ in. and below of varying sizes

down to dead small so as to represent the proportion of large and small calcined iron ore as charged into the furnace. The limestone was broken into cubes of $\frac{1}{12}$ in. so as to represent the raw limestone charged into the furnace, mountain limestone being used which had to be broken by hand on arriving at the furnace, and therefore no small limestone was charged into the furnaces. The coke to the same proportion, $\frac{1}{12}$ in. down to dead small.

The experiments with this model commenced in February, 1882, and extended over several weeks. The model was charged with small buckets $\frac{1}{48}$ the capacity of the furnace mine and coke barrows. These were tipped into the hopper of the model in the same manner as the mine and coke barrows were tipped into the blast furnaces. Eighty rounds were thus filled into the model and then a portion drawn from the bottom to get a clear section of the material as it descended in the furnace. Refilling was proceeded with until the model was filled, and it was then opened and there was found in the center of the section a column equal in the blast furnaces to 7 to 8 ft., composed of coke, limestone and large mine. Similar conditions existed at the walls of the model.

The iron ore, limestone and coke could be easily distinguished by the color—calcined iron ore being red, raw limestone being gray, and coke black. On either side of the center column a distinct region of small iron ore and coke existed, and outside the column of small material a further region of large material existed, similar to that shown in the center column.

The material charged into the model had formed two distinct cones, the apex of each being 5 ft. from the wall of the furnace, corresponding with the size of bell (13 ft.). The depression of each cone was 4 ft. 6 in. to 4 ft. 9 in., large material being very marked at the foot of each cone, so that the section across the model showed large material at each wall and in the center, but two cones of small material in a direct vertical line from the apex to the bottom of the model. The section when the furnace was full was as shown in Fig. 1 as A to A. When the furnace was lowered and the model opened, the section of the lowered material was as B to B.

Use of a Larger Bell

The bell, equal to 13 ft. diameter in the furnace, was taken out of the model and another bell, equal to 15 ft. 6 in. diameter, was inserted, and material charged as in the previous experiment. When the model was opened the section was found to consist of lumpy material in the center, the whole of the small iron ore and small coke being thrown against the wall. There was a much deeper inverted cone in the center corresponding with the increased diameter of the bell. Material equal to 35 charges was then drawn from the bottom of the model and the burden fell 12 ft. It was found that the small coke and iron ore had descended close to the walls of the model to the entire depth down into the well of the furnace, the larger material descending in the center of the cone, the material becoming smaller as it approached the walls of the model.

Experiments were made with various sizes of bell and deeper hoppers, the throat of the model being contracted to correspond with a smaller bell, filling being continued and drawing at the same time. These sections proved unsatisfactory.

The contracted throats were removed and the model restored to the original dimensions, the 15 ft. 6 in. bell being applied and the model re-charged and drawing from the bottom at the same time. When opened the small was again found close to the walls down to the well of the furnace and large material in the centre, as before. Fig. 2 shows the form of bell which was finally decided upon.

From the section shown in the model charged with a 13-ft. bell, it was apparent what was the cause of the irregular working of the furnace and the irregular quality of iron produced in 1881. It was clear the small coke and iron ore, which had formed the center circular ring of denser material, throwing the larger iron ore and limestone against the walls of the furnace and into the center column, had permitted the gases to ascend in the furnace in two distinct columns,

and prevented the closer material being acted upon in the zone of reduction, so that it came down into the hearth of the furnace unprepared.

In September, 1884, a new bell, 15 ft. 6 in. diameter, was fixed in No. 1 furnace, and in May, 1886, a similar bell was fixed into No. 2 furnace. These bells were made in halves so as to pass one-half at a time through the hopper for bolting together previous to setting, as shown by Fig. 3. Owing to the fixing of these larger bells and the better distribution of material in the furnace the make of pig iron for each furnace was increased from 23,135 tons in 1881 to 27,000 tons in 1883 and 30,936 tons in 1884, an increase of 20.7 per cent with larger bell in one furnace, and an increase of 33.7 per cent., first year, with larger bell in both furnaces. This increase was not due in any way to mechanical cleaning of iron ore, as no cleaning was existent at Skinningrove until several years afterwards. The ore smelted in 1881 to 1886 was from the same mine; limestone from the same quarry; the coke used being Pease's West quality.

Cause of Larger Output and Less Fuel

It is not difficult to determine the cause of the increased make of 33.7 per cent. of iron and the reduction of coke consumption by 2 cwts. per ton. Owing to the better distribution of material in the furnace use of bells of 15 ft. 6 in. diameter, instead of those of 13 ft., there was the entire disappearance of the two distinct cones whose apexes permitted large material to fall toward the furnace wall, and also into the center of the furnace. For these two cones there was substituted one inverted cone whose diameter corresponded with the diameter of the larger bell, which threw the small mine and coke against the furnace walls, and this small material followed the lines of the walls of the furnace as the burden descended to the tuyeres; also by directing the gases into one central channel instead of two separate channels, as shown in the model when using the small bell.

The saving of 2 cwts. of coke per ton of pig iron is due entirely to the better distribution in the furnace by the increased size of the bell. The long life of the furnace lining is undoubtedly due to the protection of the brick lining by the small coke and mine thrown against the walls of the furnace, giving less radiation through the furnace walls, the small burden acting as a thermos.

The immediate cause of blowing out No. 1 furnace in December, 1900, and No. 2 furnace in April, 1903, was the rupture of the furnace casings, which

permitted the gases to percolate through to the firebrick lining and to fire on the outside of the shell. Both furnaces at the time they were compelled to be blown out for that reason, were working on as low coke yield and making as much iron as Nos. 3 and 4. Had the furnace casing of Nos. 1 and 2 remained intact the lining would have had a longer life. When the old material was cleaned out from the well of No. 1 fur-

nace, it was found that the dead small thrown by the larger bell against the walls of the furnace had been formed into a solid ring of carbonaceous material of the following analysis:

Carbonaceous Lining from Blast Furnace

	Per Cent		Per Cent
Metallic iron and magnetic oxide	17.00	Calcium oxide	7.65
Silica	10.54	Magnesium oxide	1.74
Ferric oxide	14.43	Carbonaceous matter	39.26
Alumina	7.88	Alkalies	1.49

This ring extended for a considerable distance below the level to which the furnace was filled when blowing, and had not only greatly reduced the radiation through the furnace walls, but also, had it not been necessary

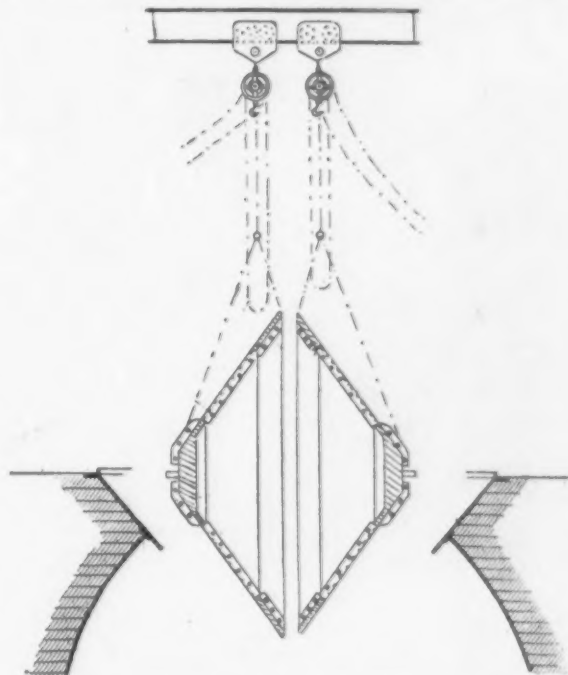


Fig. 3.—The Method of Making and Introducing the Larger Bell in Sections into the Furnace

to renew part of the brick backing for repairs to the furnace casing, would have enabled the furnace to be blown in on the original lining, after repairing the brickwork above the charging level.

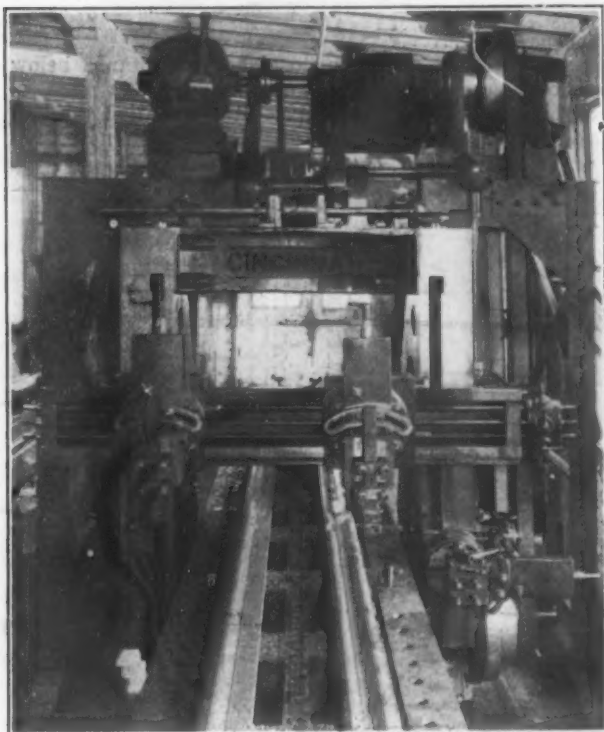
Government Will Help Lorain Plant

WASHINGTON, Sept. 17.—The War Industries Board has decided to come to the rescue of the situation in the Lorain, Ohio, industrial district, where the present power is inadequate for the Government and other work placed there. Aid will be given the Lorain County Electric Co. in the construction of its power plants now under way. The Government will make a loan of about \$400,000, and will share with the company the war wastage. There is much important War Department and Emergency Fleet Corporation war work under construction at Lorain. The Lorain County Electric Co. was building to meet the increased demands, but higher costs of material and labor upset its plans.

Reports from the various reinforced-concrete shipyards in England, Scotland and Ireland, according to *The Engineer*, London, show that good progress is being made in the construction of 1000-ton seagoing barges for the Admiralty Department of Merchant Shipbuilding. Vessels of this class are urgently required, and the program of construction already authorized comprises barges and other vessels representing some 200,000 tons of shipping and a capital outlay estimated at nearly £4,000,000, apart from the cost of land and shipyard plant. On the designs adopted the saving in steel is fully 70,000 tons on what would have been required for steel ships of the same carrying capacity. It is believed that a still larger saving will be effected when practical data become available as to the minimum proportion of reinforcement that may be employed with safety.

A New Type of Planing Machine Drive

The Greaves-Klusman Tool Co., Cincinnati, has recently installed in its shop No. 2, a 48 x 48-in. x 34-ft. Cincinnati planing machine for finishing heavy lathe beds. An interesting feature about the machine is the



The Driving Motor and the Countershaft of a Large Planing Machine Are Mounted on a Separate Iron Framework Instead of on the Housings, thus Reducing the Vibration

method employed for mounting the countershaft on a separate lattice work structure which rests on a concrete foundation and is not attached to the machine at any point.

The motor used is one with a fairly high speed and is coupled to the top shaft carrying the driving pulleys. As it is sometimes a hard matter to overcome the inherent difficulties of a running balance in a high-speed motor, the company decided to try the plan of mounting the top drive on a separate stand rather than directly on the top of the machine housings. In this way any possibility of vibration from the top drive was overcome. The face of the frame sets back of the rail about 12 in., and gives the operator the same amount of room as would be had with an ordinary drive.

The machine is equipped with rapid power traverse to rail heads, and this feature, together with the high speeds at which the machine can be operated has materially reduced the planing time on different work. The results obtained with this installation have met all expectations and the lathe beds planed on the machine are finished in erecting department with an exceedingly small amount of hand scraping.

The construction of a shipyard of eight berths, according to *Engineering*, London, was commenced last March, "somewhere on the northeast coast." The yard is to accommodate eight shipways, designed to take vessels up to 650 ft. long. Women labor is being used extensively. They feed the concrete mixer, lay and ballast the rails, fill the low ground, excavate the site of the wet dock, which will accommodate several vessels simultaneously, and in fact undertake all kinds of work which has hitherto been deemed quite unsuitable for their sex. A canteen capable of feeding 2000 workers has been erected. A number of model cottages are being built, and also a barracks to accommodate 1000 men. The ships will be fabricated, the bulk of the work being fitted together in plants in the district and delivered onto the site in as large sections as possible.

Machine for Determining Resiliency

An instrument which determines the thickness, hardness and resiliency of material has been brought out by the Advance Felt Specialty & Cutting Co., 322 South Jefferson Street, Chicago. The normal thickness of a given material in thousandths of an inch, the amount it will compress as the result of applying a known pressure and the extent to which any material will recover toward its original thickness after the application of a known pressure, are obtained in direct readings.

The resiliometer is essentially a combination of a direct reading dial type micrometer gage with a presser foot touching the platform upon which the material to be tested is placed and a reaction device for determining the compressibility and resiliency of the material. In testing a sample of material for thickness, the presser foot is raised and the material is inserted. The presser foot is now brought down upon the material, the thickness of which is registered upon the dial type micrometer gage which is graduated to read in thousandths of an inch, the maximum reading possible with this gage being 0.1 in. If the material is thicker than the limit of the gage, the needle will revolve more than once around the dial, the number of these revolutions being registered on a smaller dial provided on the gage.

To determine the hardness or resistance to compression of the material, the reaction device consisting of a quadrant with a weight attached to it is brought into play. This applies pressure to the upper end of the presser foot which sinks into the material. The thickness of the material is thus decreased and the pointer on the dial gage moves backward. As soon as this motion of the hand stops, the reading on the dial is taken and compared with the original reading of the thickness.

When the hardness reading has been secured, the quadrant is pulled back, thus releasing the pressure of the weight on the presser foot. As the weight is removed, the hand of the dial advances until the pressure of the weight is entirely released from the presser foot. As soon as this has been done the reading of the dial hand should be noted, thus giving the immediate resiliency of the material.

For example, if a sample measured 0.283 in. thick and only 0.111 in. when the weight pressure was applied, the hardness of the sample or its resistance to compression would be 39.2 per cent. If when the weight pressure was removed the material measured 0.200 in., the resiliency of the material would be the difference between this reading and the previous one when the weight was applied, 0.111 in., divided by the difference between the original reading, 0.283 in., and the reading with the weight applied. When the pressure was released, the thickness reading was 0.200 in., so that the rebound or resiliency was the difference between those two readings or 0.089 in. or 51.7 per cent of the amount the material was compressed.



The Thickness of Material Suitable for Gaskets, Washers, etc., Its Resistance to Compression and Capacity to Recover Can All Be Determined by This New Measuring Device

Frank Orth, 3437 Fir Street, Indiana Harbor Ind., has licensed the Pittsburgh Steel Co., Pittsburgh, to use the Orth roof in connection with open-hearth furnaces.

Milling Machine for Back Facing

The Moline Tool Co., Moline, Ill., has brought out a machine for back facing the various bosses on cylinders, crankcases and other parts. It is adapted to do work of this class where the bosses are near enough to the edge to be reached by a milling cutter or are not in a sharp angle where milling cutters cannot reach them. A slide carries a master plate on a vertical spindle and an inverted cutter spindle carries a milling cutter. The work



Machine and Rig for Milling Bosses on Cylinder Castings

to be faced is located by pins on the master plate (no clamping being necessary), and the master plate has notches around its edge corresponding in location to the bosses to be faced. These notches engage with and are guided by a roller mounted on the cutter spindle below the cutter.

The operator merely brings the notches in the master plate successively in line with the guide roller and advances the work to the cutter by the pilot wheel. In some cases it has been found desirable to make slight changes in casting designs, keeping all bosses of uniform height and changing ribs slightly so that the bosses can be more readily reached by the cutter.

The cutter spindle has a vertical adjustment to allow for wear of the cutter and for different heights of bosses and is driven in spiral gearing. The vertical spindle for the master plate has ball thrust bearings so that it is readily revolved. The master plates may have the notches cast in them, the edges requiring a very small amount of finishing with a file.

Coke Breeze Industry Suspended

UNIONTOWN, PA., Sept. 17.—Manufacture of coke breeze or screenings from abandoned ash dumps in the Connellsville coke regions was discontinued Monday, Sept. 16, at the direction of Fuel Administrator H. A. Garfield. The action was taken as a means of shifting labor to the beehive producing ovens and to relieve the overburdened rail lines. Local coke operators see in the order another result of the rigid coke inspection department of the Fuel Administration headed by R. C. Blazier of Johnstown.

The coke breeze industry in the Connellsville regions had a short career. It first made its appearance about a year ago when the demand for fuel became so acute and it was learned by screening ash dumps a certain percentage of discarded coke could be salvaged. The idea was taken up immediately and the new industry grew by leaps and bounds. Ash dumps which had been abandoned for many years immediately became a tangible asset instead of a liability. Some of the larger operators tried out the coke breeze scheme but shortly gave it up as impractical and the majority of the operators refrained from becoming interested in the coke region's newest by-product.

Cuban Manganese and Chrome Ores

WASHINGTON, Sept. 10.—The U. S. Geological Survey has completed an exhaustive study of the manganese and chrome deposits in Cuba. The output of both can be materially increased, particularly that of manganese. The report contains elaborate details of the various veins, with analyses of their contents, and a recital of their locations and different opportunities of exploitation.

"Manganese ore," says the report, "is found in Cuba in Oriente, Santa Clara and Pinar del Rio provinces, but only in Oriente Province does it occur in large commercial quantities. In Oriente Province the deposits are in three areas, one north and northeast of Santiago de Cuba, another south of Bayamo and Baire and the third on the Caribbean coast between Torquino Peak and Portillo. The first two include the only extensive deposits on the island. In Santa Clara Province a little ore has been found near the Caribbean coast west of Trinidad, and in Pinar del Rio Province a little occurs north of the city of Pinar del Rio and farther west near Mendoza. All these deposits were examined, but only the deposits in the two areas in Oriente Province give promise of considerable production.

"The deposits examined in Cuba are rather diverse but may be grouped into three general physical types—bedded deposits, irregular masses associated with siliceous rock or "jasper," and deposits in residual clay. The richness varies considerably. Most of the richest masses are associated with the 'jasper,' but masses that have replaced limestone thoroughly are also rich."

The report lays particular stress on labor and transportation difficulties. The latter, it says, can only be remedied with the help of the Cuban Government. "Despite these handicaps," continues the report, "the operators of manganese mines are striving to increase their output, and there is a strong interest taken everywhere in Cuba in developing manganese prospects. If railway cars and ships are provided for transporting the ore, food for the mine laborers and explosives for blasting, the outlook for a steadily increasing production in 1918 and 1919 is good. It is believed that the total output for 1918 should be between 110,000 and 125,000 tons, more than 90 per cent of which will contain from 36 to 45 per cent manganese, the remainder being of still higher grade. After the completion of a narrow-gauge track to certain important mines east of Cristo, in the Santiago district, in the summer of 1918, an increased output in 1919 is assured. The reserves of manganese ore in Oriente Province are estimated at 700,000 to 800,000 tons, more than 85 per cent of which are in the district northeast of Santiago. The daily production of manganese ore about the middle of March, 1918, in the Santiago district was between 280 and 300 tons a day. The output was curtailed later, in the rainy season, which begins about the first of June, especially that from the smaller mines, which are dependent on ox-cart haulage, but the curtailment will be more than offset by the increase in shipments after the railroad from Cristo to the Ysobelita mine has been opened.

"The approximate average composition of a large proportion of the ore now shipped is as follows:

	Per cent
Manganese	38.885
Silica	12.135
Phosphorus	0.084
Moisture	11.261

Chrome Ore Deposits

Concerning chrome ore the report says: "All the deposits of chrome ore in Cuba that have thus far attracted attention are within 25 miles, and most of them within 10 miles, of the north coast. The reserves of marketable chrome ore in Cuba range from 92,500 gross tons to 170,000 tons, but only about 2000 tons can probably be shipped in 1918 unless greater efforts to exploit it are made. The largest known deposits known in Cuba—those of the Caledonia, Cayoguan group and Potosi claims—are near the northeast coast of Oriente, in a region difficult of access. They may yield 72,500

to possibly 130,000 tons, most of which can be brought to present commercial grade by simple concentration. With suitable transportation facilities and mining equipment and sufficient labor most of this ore could be mined and shipped within two years after these conditions have been established. At the time of the examination only one deposit was ready for production and on a very small scale, but it seemed that the rate could be greatly increased by the employment of more

miners and pack animals. It would require some time to put the other deposits in this region in shape for production.

"Near Matanzas, Cardenas and Holguin there are small stocks of ore that are ready for shipment, perhaps 1000 tons in all. The ore near Holguin is of medium grade, but that near Matanzas and Cardenas is generally of lower grade. The expense of hauling the ore is reported to be almost prohibitive."

Closer Regulation of Ship Steel Planned

Requirements for Shipbuilding Must Be Approved
by War Industries Board — Chairman Hurley
and Director General Schwab Confer on Costs

WASHINGTON, Sept. 17.—All requirements of steel for the big shipbuilding program of the United States which is being carried out by the Shipping Board's Emergency Fleet Corporation must hereafter be approved by the War Industries Board before the steel can be made available. This is an important step toward a stricter regulation of the enormous steel consumption of the shipbuilders. It was taken at the request of the War Industries Board, which has been trying—in vain—to revise downward the Government's steel requirements to meet the existing shortage in steel. The new regulation was put into effect by an order from Charles Piez, vice-president and general manager of the Emergency Fleet Corporation.

"With the increasing shortage in the supply of many raw materials and manufactured products," declares Mr. Piez's announcement to the shipyards, "the War Industries Board finds it is becoming more and more necessary to control the sources of supply and facilities for production, in order that all Government needs may be served to the best advantage. The need for supervision and control is based on one or more factors—a distinct shortage of raw materials or productive capacity; the necessity for preventing the development of new industries and minimizing the use of existing ones in congested districts, whether that congestion is due to labor, transportation, fuel or power conditions; the conflicting needs of all Government agencies and their relative importance.

Demands Full Co-operation

"The War Industries Board demands full co-operation and service from the Emergency Fleet Corporation; such service must be rendered promptly, so the War Industries Board can efficiently perform the important functions placed upon it by the President of the United States. The requirements section has been charged with the responsibility of maintaining the working relations with the War Industries Board for the Emergency Fleet Corporation.

"To enable the requirements section to fulfill this responsibility, it is directed that before any purchase negotiations are instituted the requirements section be notified of such contemplated actions with as full and complete information as practicable as to the quantities needed; proposed uses; when and where required.

"To this end the division of shipyard plants, and the division of steel ships and wood ship construction—through the requisition branch of the engineering section—will refer a copy of every requisition for materials of equipment to the requirements section. The requirements section will then present such requisitions to the War Industries Board for clearance, and promptly advise the above-mentioned organization units of the corporation of the action taken by the War Industries Board.

"As any needs for new shipyards or manufacturing plants or shipyard or plant extensions become apparent, the probable and prospective requirements for them shall be submitted to the requirements section before any negotiations are instituted by any officer of

the corporation, for presentation to the War Industries Board. The requirements section in turn will promptly advise the office from which such negotiations are instituted, together with the division of the shipyard plants and the supply division, as to the action taken by the War Industries Board."

Appraising the Cost of Steel

At the same time, Chairman Edward N. Hurley of the Shipping Board is conferring with Charles M. Schwab, director general of the Emergency Fleet Corporation, and with General Manager Piez, on methods of appraising the cost of steel, wood and composite ships to the Government. The conference is the result of a preliminary survey made during the past two months by expert cost accountants. When the Shipping Board was created, before the war began, the act of Congress provided that an inquiry should be made into the difference in the cost of producing ships at home and abroad. The inquiry was arrested by America's entrance into the war and the necessity for immediately organizing a vastly increased shipbuilding industry in the United States.

"Several months ago," said Mr. Hurley in discussing this task, "I took up with the President the need for a system of accurate cost accounting in all the shipyards. The cost of labor and materials was fluctuating so rapidly at the time that it was thought best to lay the foundation for the extensive inquiry by employing expert cost accountants to work out uniform accounting within the Shipping Board and Emergency Fleet Corporation. This part of the preliminary work is nearing completion, and it is now deemed advisable to have a conference with Mr. Schwab and Mr. Piez with a view to evolving a plan for uniform accounting in the shipyards themselves.

Extraordinary Measures

"The cost of producing ships during the war is by no means confined to labor and materials. The cost of both inevitably have been high, but the trouble we anticipate in getting our approximations is due to the fact that certain extraordinary measures had to be taken, and the cost of them had to be imposed on the yards. The armed guards which have been established in all the shipyards to protect the ships under construction form a typical item of extra expense. The establishment of district offices which provide the means for Government supervision forms another item. The process of segregating many such items from the actual cost of constructing a ship naturally involves many accounting difficulties. Delays in the arrival of materials, the training of new labor, etc., must all be figured out in dollars. It is a tremendous job, involving possible amortization of actual war costs after the war, but a start has been made, and the work will be pushed to a conclusion."

Chairman Hurley also announced that the attendance to date at the navigation and engineering schools conducted by the board for training merchant marine officers this week passed the 10,000 mark. The schools have been in existence since June, 1917.

Springfield Gun Boring Lathe

The Springfield Machine Tool Co., Springfield, Ohio, built a gun-boring lathe which has a bed 28 ft. long, a headstock with a 15-in. diameter hole through the middle, and which is designed to bore a hole up to 7 in. in diameter and 21 ft. long.

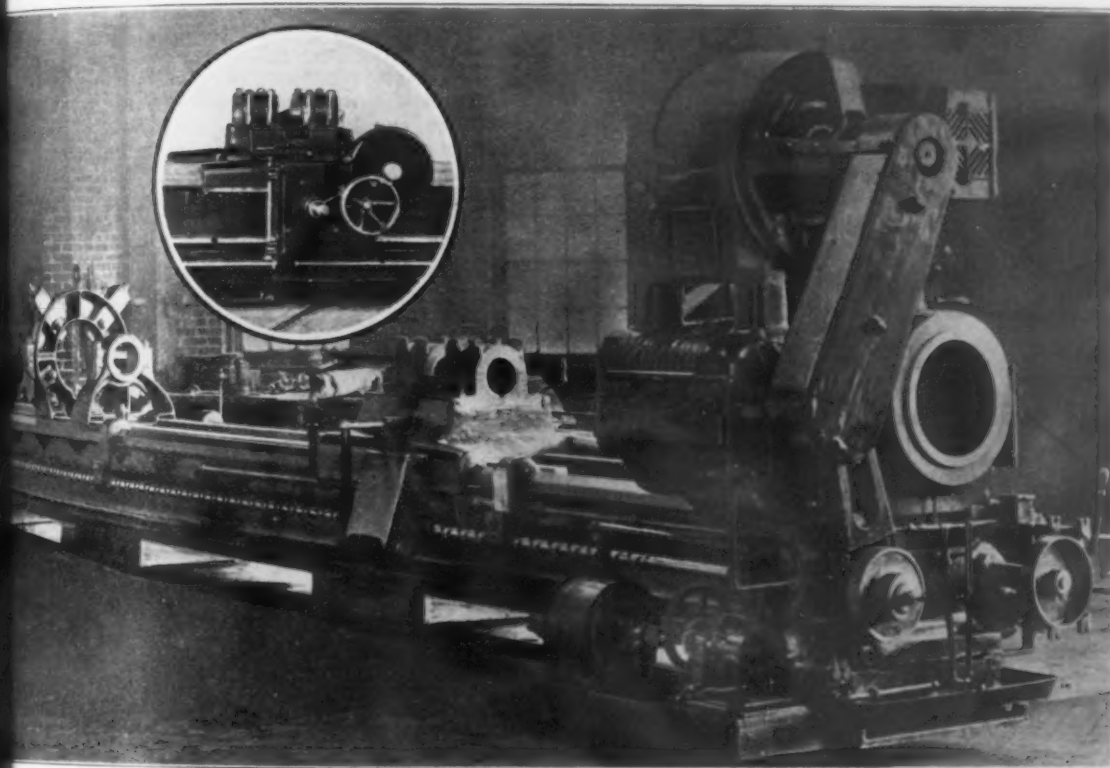
A 3-hp. variable-speed motor is employed and the power is transmitted to the rear of the headstock by means of a silent chain drive running in an oil bath. Mechanical changes of speed are obtainable through gears of chrome-nickel steel, heat treated and hardened, with the exception of the large gear directly on the chuck, which is made of high carbon vanadium steel. The motor has a speed range of 500 to 1500 r.p.m., and with the four mechanical changes of speed the lathe has a speed range of 20 to 200 r.p.m.

Provision for thrust on the large drills is taken care of by a thrust bearing containing balls 1 in. in diameter. To insure proper lubrication of the large

This quick-return screw is driven by the 3-hp. motor shown, which drives a jackshaft, and the jackshaft in turn drives the quick-return screw. This jackshaft also transmits power to a rotary pump capable of delivering 26 gal. of cutting compound under a pressure of 100 lb.

In drilling special long holes one of the worst features to contend with is the necessity of carrying away the drill chips, and this is accomplished by delivering a light liquid, such as a water cutting solution, at the point of the drill, which in the first place keeps the drill cool and in its backward flow carries the chips out of the hole into the pan. As the carriage travels along the bed, it requires a constantly increasing or decreasing length of tubing to conduct this water to the rear of the drill, and this is accomplished by a system of telescopic brass tubes each of which has packing joint, and capable of carrying this liquid to the point of the drill without leakage.

The feed mechanism is transmitted from an inter-



Gun-Boring Lathe Which Has a Bed 28 Ft. Long, Designed to Bore a Hole Up to 7 In. in Diameter and 21 Ft. Long

which is 18 in. in outside diameter, forced feed

The carriage aprons are of special design and are designed to carry large drills forward at varying speeds. A regulated pressure required on the drill is 50,000 lb. Two large racks on top of the bed provide for the movement of the carriage and the gear reduction amounts to 10 to 1. For the small movement forward and backward of the carriage, a hand wheel is provided in front of the carriage, but for longer travel a quick-return mechanism is provided on the rear of the carriage, shown in the accompanying view. An interlocking lever on the carriage apron is to prevent the quick-return mechanism being engaged while the feed mechanism is in operation.

At the rear of the carriage is also shown the feed mechanism, which causes the carriage to travel up and down the bed at a rate of speed of 35 ft. per min. This is accomplished by means of a double-threaded screw with a lead of $4\frac{1}{2}$ in. The box arrangement consists of two circular nuts, one with right-hand and one with left-hand thread, and by locking either one of these with a friction clutch causes the carriage to operate in one direction or the other. As the machine is very large, it will be noted that this screw, as well as rod and the machine, must have additional supports.

mediate shaft in the headstock to a two-step cone pulley by means of a silent chain drive; thence through a belt to the front of the machine to a gearbox located directly behind the controller on the front left-hand corner of the machine. This gearbox, by means of a train of gears, has five different feeds, which together with the two-step cone gives 10 different drilling feeds to the carriage. These feeds range from 0.0015 to 0.016 in. per rev.

The entire machine stands in a steel pan, which catches the chips and drilling compound, with a return of the compound to the reservoir, where it is again delivered to the drill point. The machine weighs, complete with the electrical equipment, 31,000 lb.

Property known as the Nelkirk ore bank farm, near Carlisle, Pa., comprising considerable iron ore lands, has been purchased by Jacob A. Bard from Col. George H. Stewart. It is understood that Mr. Bard and associated interests plan to operate the property. At one time the land was worked by the Minersville Coal & Iron Co., which shipped the ore to its furnace in Schuylkill county, while later, it was operated by Isaac McHose, who shipped the ore to the Cordelia furnace, Lancaster County. Colonel Stewart purchased the land from Mr. McHose.

WAR STEEL TOTAL GROWS

Conference on Prices Set for Thursday—Cutting Down Consumption

WASHINGTON, Sept. 17.—Higher prices for pig iron and some forms of finished steel are likely to be asked by the producers at Thursday's meeting of the Price Fixing Committee of the War Industries Board. It promises to be an important session. Besides the matter of prices, urgent attention will be given to methods of increasing the fall output.

The date for the meeting had originally been set for Wednesday but it has been moved up to Thursday. The executive committee of the Price Fixing Committee, however, will meet on Wednesday. Both the Railroad Administration and the Emergency Fleet Corporation will be represented at this session and it is expected that they will oppose efforts to increase the prices of rails and plates. The Emergency Fleet Corporation has just put in a new rule, at the request of the War Industries Board, to give the latter a greater control over shipyard requirements of steel. Hereafter all requisitions for steel for ships as well as for construction work in the yards, must be passed upon by the War Industries Board before they can be sent to the mills. One of the factors which will figure in the discussion of prices on Thursday promises to be the general increases of wages which have been awarded by the War Labor Board in every controversy involving the iron and steel industry throughout the country. These increases, not only in the steel industry itself but in such important subsidiaries as coal mining, and the increased railroad rates and general upward trend of prices will all figure in the effort to raise the steel prices.

War Requirements Still Growing

At the same time the representatives of the steel section of the War Industries Board will present to the meeting the latest revision of the Government's steel requirements for the current six months. These steel requirements have been revised upward with remarkable regularity. When they passed the 25,000,000-ton mark, Chairman Baruch of the War Industries Board ordered a more drastic revision. This has been under way now for two weeks. When the figures seemed complete at the end of last week the War Department called its estimate back for further revision. As this came at the same time that General Pershing's forces were battering down the St. Mihiel salient, with greater offensive efforts in prospect, it probably meant another revision upward.

The War Industries Board is still trying to check all possible steel consumption. It has had a series of new industries on the carpet during the last week to cut down their consumption. The National Automobile Chamber of Commerce has canceled the national automobile shows of 1919, to have been held during January and February in New York and Chicago, at the request of Chairman Baruch and of George N. Peek, Commissioner of Finished Products of the War Industries Board. Going further to meet the views of the War Industries Board, the automobile industry leaders have urged promoters of local shows for automobiles, trucks or accessories to abandon all plans for such during the coming winter.

Building Industry Protests

The War Industries Board's plan of cutting down the consumption of steel and other materials by having the State Councils of Defense pass upon such products has resulted in a Senate demand for an investigation. On a motion of Senator Calder of New York a resolution was passed calling upon the board to advise the

Senate under what authority of law it had taken action. Senator Calder declared that the orders of the board would completely destroy the building industry of the country.

"The building-material industry has an investment of \$4,000,000,000 in its business," declared Senator Calder, "and the new buildings constructed in the nation in the last pre-war year, 1916, totaled \$1,800,000,000. As I understand these orders, they prevent the construction of a barn, a silo, or even a private dwelling house or of any building of a private character without the permission of the Federal Government. If it is necessary in order to win the war to destroy this great wealth and tax-producing industry, of which it seems to me there can be few more essential, we ought to know it and the reasons for it, and the people must adjust themselves to it; but if this great business is to be saved, at least in part, some way should be found to do so."

Iron and Steel Electrical Engineers

The twelfth annual convention of the Association of Iron and Steel Electrical Engineers was held at the Southern Hotel, Baltimore, Md., Sept. 11 to 14 and was largely attended. Many important subjects were taken up and timely papers read.

Officers were elected as follows: President, D. Petty, superintendent electrical department Bethlehem Steel Co.; first vice-president, B. W. Gilson, superintendent electrical department Carnegie Steel Co., Youngstown; second vice-president, H. C. Cronk, Kinney Steel Co., Cleveland; treasurer, James Farrington, La Belle Iron Works, Steubenville, Ohio; secretary, John F. Kelly, Empire Building, Pittsburgh; directors, E. S. Jefferies, Steel Company of Canada, Hamilton, Ontario; G. W. Richardson, American Bridge Co., Piquette, Pa.; F. A. Wiley, Wisconsin Steel Co., South Chicago, Ill.; and Walter Kennedy, Pittsburgh Crucible Steel Co., Midland, Pa.

At 4 o'clock in the afternoon of Sept. 12 the convention adjourned for the day to take part in a large patriotic meeting held at the hotel. This was followed by a banquet which was attended by the women visitors. On Friday the delegates were taken aboard a boat to Sparrows Point, Md., where they inspected the furnaces, steel works and shipyards of the Bethlehem Steel Co., and on the morning of the closing the delegates enjoyed a trip to the plant of the Hotchkiss Steel Corporation, Baltimore.

Many of the delegates left Baltimore for Philadelphia to attend a joint session of the electric welding committee of the Emergency Fleet Corporation, the Philadelphia sections of the association, the American Institute of Electrical Engineers and the Engineering Club of Philadelphia at the Bellevue-Stratford Hotel on Monday evening, Sept. 16. The subject discussed was "Electric Welding a New Industry."

The committee in charge of the convention in Baltimore consisted of Alfred H. Swartz, Cleveland, chairman; Paul Caldwell, H. C. Cronk, W. L. DeCoursey, D. Donovan, F. D. Egan, J. T. Fleischer, E. Friedlander, R. B. Gerhardt, B. W. Gilson, C. A. Huebner, J. Kelly, Saul Kodjbanoff, Saul Lavine, R. D. Nye, R. Petty, A. R. Ross, T. E. Tynes, R. G. Widdows and F. A. Wiley.

Greaves-Etchells Electric Furnaces

The Electric Furnace Construction Co., Philadelphia, has now successfully started up a 6-ton Greaves-Etchells electric furnace at the Puget Sound Naval Yard. The small furnace is also running very satisfactorily on special materials at the works of the Ford Motor Co., Detroit. In England large furnaces of this type have recently been started up for the British Government and the Royal Small Arms Factory, Woolwich. The second 15-ton furnace, installed by Kayser, Ellison & Co., will be running soon on high grade aeroplane steels. The Daimler Motor Co. has also recently ordered a second furnace.

Advances in German Steel and Coal Prices

A comparison of the percentage increases in the prices of coal and iron and steel in Germany at the time of the outbreak of the war with those prevailing at present shows the surprising fact that, as contrasted with coal, the prices for iron and steel have risen proportionately less than those for the former, if special qualities of steel are left out of consideration, says the *London Iron and Coal Trades Review*, which concludes:

"This is an additional argument against nationalization. The German Government are interested very largely in German collieries; they are not interested in iron and steel works.

"The average advance in coal is from 100 to 150 per cent, except in small coal, which has nearly trebled in value. As regards ore, the Dillenburg (Nassau) ore has only risen by 85 per cent during the course of the war, while Siegerland ore is 117 per cent up, notwithstanding the great demand for these ores, which form an important supply for the production of steel in special analysis. The hematite and open-hearth pig produced from these ores show, however, a materially greater advance, the former having increased by 184 per cent and the latter by 210 per cent.

"The prices for semi-finished steel and wire rods only show a moderate increase during the war, while those for plates and sheets, at an advance of 180 and 179 per cent respectively, stand next to open-hearth pig as representing the greatest advances which are taken place in the market. The following table gives a comparison of the prices in August, 1914, and those now in force, which are maximum prices:

	August, 1914		August, 1918		Increase
	s. d.	s. d.	s. d.	s. d.	Per cent.
Nassau red iron ore	18 6	25 0	85		
Siegerland ore	19 0	41 3	117		
Hematite pig iron	78 6	223 0	184		
Open-hearth pig iron	69 0	214 0	210		
Gelegelsen	79 0	166 6	110		
Plates	87 6	192 6	120		
Sheet bars	97 6	207 6	112		
Wire	95 0	235 0	147		
Steel rods	98 0	275 0	180		
Steel No. 20	120 0	335 0	179		
Wire rods	117 6	250 0	113		

"A comparison with prices in Great Britain shows that the advance in German pig iron has been considerably greater than here, while steel prices are on much the same level, except plates, which command higher prices in Germany. Apparently the maximum prices noted in the table are not always adhered to, as we gather from the German papers that if private customers wish to secure delivery they are compelled to pay substantially higher rates than those mentioned."

American Tin Mines

The War Department, on the initiative of the War Industries Board, has commandeered the Cash tin mine in Virginia. The prospect is on Irish Creek, in Rockbridge County, Va.; it has been tied by litigation for many years, although well reported by successive engineers, says the *Mining and Scientific Press*. "The War Department will execute a lease to responsible parties on condition that they proceed to work in a systematic manner, and to insure this the department will nominate an engineer to supervise the operations." At the same time the English owners of the Temescal tin mine in southern California have made it possible for a group of capable American engineers and capitalists to begin production from that long neglected but apparently meritorious property."

The Canton Sheet Steel Co., Canton, Ohio, is installing a new 60-ton open hearth furnace, making four furnaces in all in this plant. It also plans to install an 8-in. merchant mill within the next few months. Contracts for this have not yet been placed. This company is now a subsidiary of the Hydraulic Pressed Steel Co., Cleveland.

Local munition plants at Birmingham, Ala., have been advised that the Ordnance Department will require large quantities of shells at an early date, consisting of 75 and 155-mm. shells, 12-in. shells and high explosives.

COST OF WAR

Ordnance Program Responsible for Large Part of Expenditures

WASHINGTON, Sept. 17.—The War Department has compiled a lot of interesting statistics to show where the proceeds of Liberty bonds go. This is part of the campaign to cause interest in the sale of the bonds of the fourth Liberty loan to begin Sept. 28.

Of the War Department's expenditures, the ordnance program accounts for stupendous sums. The total amount of money directly appropriated by Congress for the ordnance program, or for which authorization has been given to incur obligations, amounts to approximately \$12,000,000,000, since the beginning of the war. From the beginning of the war, to June 30, 1918, the last day of the past fiscal year, contracts were placed by the Ordnance Department from appropriations and authorizations existing at that time amounting to \$4,300,000,000. It is estimated that during the present fiscal year ending June 30, 1918, the actual cash expenditures for ordnance will reach a total of \$7,000,000,000.

The major items for which cash expenditures were made or for which contracts were placed, up to June 30, 1918, were as follows:

Artillery	\$1,050,000,000
Automatic rifles	300,000,000
Small arms	100,000,000
Artillery ammunition	1,900,000,000
Small arms ammunition	340,000,000
Small arms ammunition practice	80,000,000
Stores and supplies (personal horse and organization)	230,000,000
Armored motor cars	100,000,000
	\$4,100,000,000

The major items for which Congress has made appropriations available for the present fiscal year are as follows:

Artillery	\$1,280,000,000
Automatic rifles	500,000,000
Small arms	260,000,000
Artillery ammunition	2,650,000,000
Small arms ammunition	955,000,000
Small arms ammunition practice	150,000,000
Stores and supplies	445,000,000
Armored motor cars	277,000,000
For army purposes, contract authorization: purpose not definitely designated	500,000,000
	\$7,017,000,000

Expenditures in connection with military engineering operations directly relating to the war have exceeded \$375,000,000 during the past year, of which the larger part went for docks and railways in France.

In 18 months more than 2,000,000 rifles of the new 1917 model, considered by many experts the best army rifle in the world, have been made, inspected, assembled and issued, and the weekly production is growing. It would not be desirable, for military reasons, to state the exact output of larger guns and munitions, but the volume of this production, already large, is mounting steadily.

Purchases for the army since we entered the war include 34,972 rolling kitchens, which cost \$47,480,000; 38,427 field ranges, costing \$1,635,994; 109,306 carpenter's chests, costing \$2,732,650; and 5600 blacksmith's chests, costing \$224,000. The army is using 2,574,982 shovels costing \$1 each; 1,392,500 lantern globes costing 30c. each; 105,727 desks, costing \$1,377,360; and 47,541 portable forges, costing \$950,820. There have been contracted for 106,000 motor trucks of all types, sizes and styles, costing \$240,315,000; 10,700 passenger cars, costing \$12,275,000; 54,400 motorcycles, costing \$10,255,000; together with many thousand bicycles and cargo and tank trailers. Of wagons and carts the total number is 266,000 and the cost, \$37,025,000.

Bart L. Thane, head of the Alaska-Gastineau Mining Co., of Juneau, Alaska, when in Seattle, Wash., recently, announced that final surveys and examinations for the proposed steel plant to be erected on Puget Sound would be undertaken. Mr. Thane asserts that the plant is absolutely assured.

PIG TIN POOL

All Imports Will Be Consigned to the American Iron and Steel Institute

WASHINGTON, Sept. 17.—The War Industries Board has announced the details of the interallied pooling agreement referred to in the IRON AGE of Sept. 12, which has created an international monopoly of the world's supply of tin. The agreement was made by representatives of the United States, Great Britain, France and Italy at conferences held in London. The representatives of the United States were L. L. Summers, member and technical adviser of the War Industries Board, and George Armsby, chief of the Tin Section of the War Industries Board. Similar pools may be formed later for other raw materials, when the demand exceeds the supply.

The plan of distribution agreed upon allows the United States about 80,000 tons of pig tin, two-thirds of the world's entire production annually. The War Industries Board will supervise distribution of this allowance. All imports of pig tin, tin ores and concentrates will be consigned to the American Iron and Steel Institute, which will receive, pay for and distribute the metal to the industry through the United States Steel Products Co.

The price will be regulated by the War Industries Board and will be uniform to all consumers of ten tons of pig tin or over. There will be another uniform price for users of less than 10 tons. These prices will be maintained at a level which will encourage production in the tin mining countries but stop profiteering. Prices, rules and regulations will be announced later. It is probable that users and dealers may be licensed.

The War Industries Board believes these arrangements will insure a steady supply of material at a stable and reasonable price. Since the negotiations for the pooling arrangement began in London six weeks ago, the price of pig tin has fallen steadily. The quotation on Sept. 6 showed a net decrease of 14c. per pound as compared with the price on July 15, 1918. This reduction seems to be traceable directly to the organization of the pool. For there had been no question for some time that speculators were forcing the tin prices upward in the expectation that the growing scarcity would net them fancy profits. News of the plans for the pool, however, made it seem certain that the interallied agreement would fix far more reasonable prices for this product as well as penalties for its hoarding. This was certain to start the market downward.

That there may be a sufficient supply of tin in the United States to meet the war needs and to supply essential civilian uses, vigorous plans for conservation of the metal are being made effective through co-operate efforts by the War Industries Board and by the Food and Fuel Administrations in the enforced substitution of other than tin for containers, wherever that is possible. Tin container manufacturers have agreed with the War Industries Board in plans that will curtail their use of tin plate 30 per cent, which means a saving in the next three months of about 150,000 tons of tin plate.

The Food Administration is working out a tin conservation plan with various industries, including lard and lard compound packers, wholesale grocers, cracker manufacturers, tea and coffee packers, cocoa and chocolate manufacturers and baking powder manufacturers. All have been urged to substitute fiber, paper or other containers where possible.

The Fuel Administration has taken up the subject with the oil dealers and the War Industries Board is working along similar lines with the tobacco manufacturers and all industries in which tin is used in turning out the finished product.

The Jeffrey Mfg. Co., Columbus, Ohio, has reopened its branch office at Cleveland in the Leader-News Building. It will be in charge of P. C. Dierdorff and C. B. Reed, both of whom have had extensive experience in the manufacture and sale of Jeffrey products.

New Bessemer Ferrosilicon Plant Chattanooga

A new plant has been completed and was put in operation Sept. 8, at Chattanooga, Tenn., to produce Bessemer ferrosilicon in electric furnaces. It was built by the Chattanooga Electro-Metals Co. and though encouraged by the Government, the enterprise was to a great extent financed with Chattanooga capital. An adjoining sister plant is that of the Southern Ferro-Alloys Co. The capital stock is given as \$200,000, and the personnel is as follows: Paul Kruesi, president and treasurer; N. Thayer Monteith, first vice-president and secretary; G. L. Davison, second vice-president and manager, and Arthur R. Ragsdale, general superintendent. Mr. Kruesi is also president of the older company.

The main building is of steel with iron roof trusses, and there is a detached fireproof building for transformers, which are 4000 hp. and weigh 25,000 lb. Another small fireproof building houses the automatic regulators which govern the large carbon electrodes in the furnace. The electrodes are nearly 3 ft. in diameter and 7 ft. long, costing \$150 each. One set is consumed every day. The new plant is the second largest user of power in or around Chattanooga. Current will be supplied at 6600 volts, the alloy plants doing their own transforming. The company will make grades from 10 to 16 per cent during the war. Southern Ferro-Alloys Co. makes only 50 per cent ferrosilicon.

The original intention was to manufacture ferrosilicon, chrome and other alloys. The manufacture of the present product was undertaken at the suggestion of the War Industries Board because of the acute shortage of Bessemer ferrosilicon and the long time it would require to build blast-furnace plants to relieve the situation in the Government steel requirements.

The expected output is 15 to 18 tons of ferrosilicon every 24 hr. Operation will be continuous, including nights, Sundays and holidays. The plant provides safety measures and conveniences for employees, including shower baths and required rest periods each week for every employee. The operations will be in charge of George L. Davison, metallurgist and chemist, formerly connected with the United States Steel Corporation and now manager also of the Southern Ferro-Alloys Co.

The plant was designed by the Fitzgerald Laboratories, Niagara Falls, N. Y., pioneers on electric furnace work. The product will be sold by the F. Banks-Morse interests at 30 Church Street, New York.

A country-wide canvass of automobile registration has yielded the following facts: By the opening of 1919 there should be 6,300,000 automobiles, passenger and commercial, officially listed in the United States representing a valuation of not less than \$5,000,000,000. These registrations will compare with aggregates of 5,092,683 and 3,588,603 respectively at the start of 1918 and 1917. At the end of the current twelve months, according to official predictions, the number of registered automobiles will have expanded 24 per cent during this year and 76 per cent since Jan. 1, 1917. Every seventh person in Nebraska owns a car. In Iowa the ratio is 7.6, in California 7.8, in Kansas 8.6, and others in the farming regions show low ratios. Measured against the population of a year ago there is an automobile for every 24 persons in Massachusetts, and one for every 21 in New York. In the South the motor absorption shows a much lower development, there being as few as 40 to 46 persons per car in certain Southern States.

The Enameling and Stamping Corporation, 200 West Street at Webster Avenue, Long Island City, N. Y., has equipped the plant of the Fickling Enameling Corporation to apply to metal products a baked-on finish of transparent rust proofing as distinguished from the temperature vitreous porcelain enamel. The baked-on coatings are made at temperatures of 400 to 600 deg.

Iron Mines Which Allies May Capture

Great Deposits Seized at the Beginning of the War

Territory Toward Which the Allied Forces Are Advancing May Play Part of the Highest Importance in the Political and Industrial History of All Countries Involved in the Struggle—Location of Blast Furnaces and Steel Plants in French Territory Held by Germany.

THE recent advance of the American troops north of St. Mihiel has focussed attention upon the French Lorraine mines of the Briey district, which were seized by Germany in her first rush across Belgium and into France in August, 1914. Cut off almost entirely from importation of iron ore from other countries, with the exception of the little from Luxemburg, Germany, for four years, has supplied her tremendous and ever-increasing demand for ore from the deposits of this Briey district. The importance to Germany of retaining these valuable iron fields cannot be overestimated; in fact, their possession is absolutely essential if Germany is to keep her armies in the field.

In order that a clearer understanding of the important part this relatively small portion of territory will in all probability have in the shaping of future events, not only as it now appears likely as regards the ending of the war but as an important factor to be considered in the determining of boundary lines and inter-trade policies after the war, the following facts and statistics bearing upon this district with special reference to its relation to France and Germany are presented. The material is taken largely from articles by H. H. Campbell that have appeared in THE IRON AGE in the past four years.

Location of Steel Plants and Deposits of Ore and Coal

In order to present the subject clearly, a map is given showing the relation of the deposits of iron and coal and the location of steel plants to the present fighting line. A few cities like Paris, Lille and Metz are prominently marked, so that the reader can get his bearings, but almost every place shown is an important factor in the steel business, either because it has steel plants or mines of ore or coal, or because it is a shipping port.

The steel plants in eastern France are mostly near Longwy, Briey and Nancy; in Belgium, near Charleroi and Liege; while in German Lorraine they are at small places like Rom-

bach and Hayingen, which are not shown on the map because they are close to Thionville. There are also steel plants at Dudelingen in Luxemburg and at Differdingen near Luxemburg. In Westphalia the only places given on the map are Ruhrort, Essen and Dortmund, but there are important steel works at Hoerde, Bochum, Oberhausen and elsewhere. The map does not give these details, being intended to show only the general situation. There is also a steel plant at Aachen (Aix la Chapelle) in the Rhine province. The principal coal fields are Valenciennes in France, Charleroi and Liege in Belgium, Saarbrucken and Westphalia in Germany.

The Longwy-Briey-Nancy district, comprising the Minette ore fields, occupy a rectangle measuring 60 miles north and south by 20 miles east and west.

Basis of Half of Europe's Pig Iron

There are three separate ore fields: Longwy in the north, Nancy in the south, and Briey in the center, this latter district being only a few miles northwest of Metz. In the year 1910, the output in the various districts mentioned represented 14,372,000 tons of pig iron, which is 70 per cent of the total output for Germany, Luxemburg, France and Belgium combined. Omitting Great Britain and taking the total for all the rest of Europe, including Germany, France, Belgium, Russia, Austria-Hungary, Italy, Spain and Sweden, all these countries produced a total of 26,957,000 tons of pig iron, while this Minette district, as above stated, accounted for 14,372,000 tons. Thus more than half the pig iron of all Europe was made from this deposit.

In most places the ore is near the surface, but in the Briey field there are large mines where the ore is raised from a depth of from 500 to 800 ft. The Briey field is much the largest of the three, and produces two-thirds of the output of the province, the whole district in 1913 raising about 15,000,000 tons, or over 90 per cent of the total ore output of France.

This ore from the Briey field is of fairly regu-



FIRST AMERICAN ARMY'S LOCATION NEAR THE IRON MINES

The Heavy Black Line in the Map Shows the Location of the American Forces, Some of Whom Early This Week Were on the High Road from Verdun to Etain, About Five Miles West of Etain, Which Stands at the Gateway to the Briey Iron District. The new American line runs southeast from Abaucourt, a small town between Verdun and Etain, and toward the southern part of the line is about 10 miles from Metz. It seems highly probable there will be an important drive at a very early date, but whether it will be in the direction of the ore mines is unknown. Rapid advance can hardly be expected, as a great deal of the country into which the Americans are moving is rugged with high dominating ridges and also marsh land, rivers and dense woods, which have been prepared for a determined defense by the Germans.

lar composition. If the lime is not included, there is considerably over 50 per cent of iron in the roasted ore, and since the lime is valuable as a flux, it is plain that the deposit is high grade. Phosphoric acid is present in such proportion that the pig iron contains about 1.70 per cent of phosphorus and the iron is used almost altogether in the basic Bessemer converter.

Germany's Control of French and Belgian Steel Industries

Germany was well equipped to utilize this grade of ore. As early as 1880, or 10 years after the appearance of the basic converter in that country, Germany made 18,000 tons of Bessemer steel from pig iron high in phosphorus. There has been a steady increase in output ever since, and in 1913 Germany made 18,959,000 tons of steel, 56 per cent being made in the basic converter and 39 per cent in the basic open-hearth, there being less than 3 per cent of acid steel. Not only did Germany have her own large capacity of furnaces available, but those of Belgium were also at her disposal. For the last 2000 years, Belgium has been one of the most important iron-producing regions in Europe. In 1913, Belgium made 2,466,630 tons of steel, the larger part by the basic Bessemer process. Immediately after getting possession of the steel plants and mines, Germany bent every effort to utilize them to the limit of their capacity, and her success as to the coal mines can be gaged by the fact that by the early part of 1915, Belgium's coal output was reported as being 55 per cent of normal. Not only did Belgium mine enough coal to supply her own needs before the war, but large quantities were exported to France.

Further information as to the extent to which Germany had gained control of French and Belgian steel industries as early as 1915 is indicated by the following brief abstract of a paper on "The Iron Industries During the War," read before the association of German Ironmasters in Dusseldorf, Jan. 30, 1915, by Dr. Emil Schrödter:

"In France, Germany now holds parts of 10 departments, covering an area of about 5,250,000 acres with a population of 3,255,000. This means a German control of 68.8 per cent of the coal output of France; 78.3 per cent of the coke output; 90 per cent of the iron ore; 85.7 per cent of the pig iron output; 76 per cent of the raw materials, including 95.3 per cent of the basic Bessemer steel and 76.9 per cent of the steel castings, and the entire output of tubes. All but one of the French locomotive and railroad car plants are in German hands. For wrought tubes the French will have to rely on British and American supplies. Practically all of the French iron-ore mines are in territory occupied by Germany.

"Out of 170 French blast furnaces, 95 of the 127 in blast when the war broke out are in the war zone. Because of ore scarcity only 30 of those still in French hands are able to run, and many of these are small. Hence 80 per cent of the total French blast-furnace capacity is out of commission. Of the French steel plants 70 per cent are in German hands. Steel plants uninjured are largely idle. At the horse-shoe works at Valenciennes enormous stocks were found and appropriated by the Germans."

Summing up as to France, Dr. Schrödter said: "While we on the German side are able to draw upon enemy stocks, the French army is deprived of the greatest part of its manufacturing resources and has to get its material from foreign countries. Hence France has already been so severely hit as

to cripple and partly destroy her economic power."

In regard to the industrial situation of France in the war area, Dr. Schrödter, in an article appearing in *Stahl und Eisen* early in 1915, stated that 60.5 per cent of the output of mines and quarries and 54.1 per cent of the iron, steel and metal output depend on the war zone. If, according to Dr. Schrödter's figures, there remained to France 30 per cent of the coal mining industry the actual production figures would be far from reaching this percentage; as information showed that the daily production of coal in France at that time did not exceed 20,000 tons—15 per cent of the normal. Dr. Schrödter concludes that over 40 per cent of the aggregate industrial activity of France was under German control so far as concerns steam power.

Importance to Germany of the Longwy-Briey Mines

In 1913 the imports of iron ore into Germany were as follows: Sweden, 4,564,000 tons; France, 3,811,000 tons; Spain, 3,632,000 tons; Russia, 489,000 tons; Algeria, 481,000 tons; Norway, 303,000 tons; Greece, 147,000 tons; Tunis, 136,000 tons; Newfoundland, 121,000 tons; Austria, 106,000 tons; other countries, 161,000 tons—a total of 13,951,000 tons. Some of this ore went to the province of Silesia, especially that from Russia and Austria, but most of it was used in western Germany.

In spite of these tremendous importations, more than half of the ore used at the furnaces on the lower Rhine came from the Minette field, a distance of 175 or 200 miles. Part of this was from German Lorraine, just north of Metz; part from Luxemburg, and part from the French province of Meurthe-et-Moselle.

Not only did Germany continue after war was started to supply the lower Rhine furnaces, and make up for the loss of her importations, but a report by six industrial associations of Germany to Chancellor Bethmann-Holweg stated that, "If since August [1914] our ore production had not doubled, the war could not have continued."

The Iron Ore Districts After the War

It is impossible to tell what is going to happen relative to possession of the iron ore districts after the war, but it is possible to get the main facts together and at least understand the problem. At the close of the Franco-Prussian war in 1871, Bismarck retained the Thionville district of rich iron ore and left to France the ores of the Briey district, which are high in phosphorus. Neither country knew the value of these latter deposits, because they did not become really important until after the invention of the basic Bessemer process in England in 1878. At the close of this war, however, the situation will, of course, be entirely different. The value of this territory is now thoroughly appreciated by all the fighting nations. It is interesting to consider what the effect would be if France should annex all of Lorraine, or Germany retain the territory she now occupies.

Before the war there was free trade in iron ore between the countries of Western Europe. France obtained a considerable quantity of calcareous ores from Germany to mix with its silicious ores; while Germany obtained silicious ore from France to mix with its calcareous ores. If France should annex all of Lorraine, it might put an export duty on iron ore and make this duty so high that it would be prohibitory, and thus France could control a very large part of the supply which has been of such great value to Germany.

Lorraine has become the center of the industrial system of Germany, for these Minette ores not only form the basis of its iron and steel industry but also of its agricultural life, for Germany uses the basic slag from its Bessemer converters on its farm land and is thus able to raise a good deal more than twice the quantity of wheat, rye, oats and potatoes to the acre that we raise in the United States. Germany has been able to sustain itself during this war by the output of its own farms, because of the use of this slag as a fertilizer. All the world knows of Germany's virtual monopoly of the aniline dye industry and this springs from coke manufacture in connection with blast furnace operation.

If Germany should succeed in retaining the Minette field, she could by putting a prohibitory export duty on iron ore paralyze the whole iron and steel industry of both France and Belgium and possess a virtual monopoly of the steel manufacture in western Europe.

A French Expert's View

Marcel Knecht, member of the French High Commission in the United States and a native of Lorraine, addressed a meeting of the American Society of Mechanical Engineers in New York on Tuesday evening, Sept. 17. In 1913, he said, the annexed part of Lorraine, which was under German domination, produced 21,000,000 tons of iron ore. And the French part, which had not been taken by Germany in 1871, the part which has been occupied, nearly all of it, since 1914, produced in 1914 19,000,000 tons of iron ore. In the same year, 1913, the whole German territory, excepting the annexed Lorraine part, produced only 7,000,000 tons of iron ore. In the Lorraine district, he continued, we produced in 1914 48,000,000 tons of iron ore, and in your Lake Superior district in the same year there was a production of 52,000,000 tons.

In Lorraine and in Luxemburg there are resources of iron ore, he added, which will exist when there will be no more iron ore left in the Lake Superior district. "We have resources amounting to 5,330,000,000 tons of iron ore in those two little spots on the map of Europe."

He spoke particularly of the ore at Briey, and in spite of the depth of the mines and the necessity of unwatering them, the ore was obtained in 1913 for 4.69 francs or about 90 cents per metric ton. The importance of this deposit he emphasized in explaining that its output amounts to 76 per cent of that of the Longwy-Briey-Nancy district.

Meanwhile France has been developing a rich iron ore in Normandy, and Mr. Knecht expressed a lively conviction that before long the much-talked-of tunnel under the English Channel will be a fact and French iron ore will go into England and France will be getting in return the coal she needs from England and Scotland.

To convince his audience of the importance of the region where the recent American army successes have been made, he stated that when France lost the Briey-Longwy fields, she lost 65 to 70 per cent of her steel production, 80 per cent of her pig iron output, 85 per cent of her iron ore supply and 55 per cent of her best mechanics. But in the face of 1,500,000 of her men killed and as many more wounded, and 3,000,000 in occupied territory, she has been able, with the help of British coal and our own steel, to equip by June, 1918, with field guns, 20 divisions of the American army, meanwhile having helped Russia, Serbia, Rumania and other allies not only with prodigious quantities of munitions, but with officers to instruct and train.

W. L. Byers, production manager in the Connellsville district for the United States Fuel Administration, reports that for the week ending Sept. 7, the output of coal in the Connellsville region was 718,221 net tons, an increase over the previous week of 2,424 tons, and the largest output in any week for a year.

German Iron and Copper Ore Imports After the War

The head of a firm of German ore importers informed the representative of a Hamburg paper that the proposal of an import syndicate for iron ore has again been dropped, as the government has no intention of controlling this branch, according to the *London Iron and Coal Trades Review*. The article further says:

As a matter of fact, a shortage of iron need hardly be feared. The Polish iron ores are rather overrated; at any rate, the experience of German private undertakings is hardly promising. The Ukraine, on the other hand, may be relied on to yield valuable iron ores, especially for the Upper Silesian blast furnaces, provided normal conditions are restored in transport. As for Swedish iron ores, much will depend on whether the Swedish Government succeeds in its efforts to attract sufficient capital for smelting in Sweden itself. Moreover, it must not be overlooked that the favorable trade balance of Sweden rests largely on the export of iron ore. In German iron circles the view finds currency that the Swedish Government should be made to feel that German industry is not wholly dependent on Swedish supplies. One point, however, should be remembered. Even if there is no intention of regulating the import of iron ore in the transition period, the shipping problem may nevertheless make such regulation necessary. The tonnage situation will indeed have no small influence on the solution of the whole problem of ore imports. The only state import organization which has come into being is for pyrites, of which German industry requires considerable quantities.

As regards copper ores, Germany, of course, needed these in the first instance, and she has been deprived of this ore of the countries where she satisfied her requirements before the war—America, Australia, Japan, and the Congo. The various companies, which are now completely under British influence, have made mutual agreements for years to come, so that there is little chance of Germany obtaining the ores directly. Her principal sources of supply will now have to be Turkey and the Caucasus, but there should be no exaggerated hopes as to their possibilities. The deposits are but little developed, and German companies will have many difficulties to overcome in Turkey, where the inhabitants are anything but friendly.

The German Government has not sanctioned the foundation of a special copper importing company, for experience has shown that after the war untrammelled trade will be in a better position than the government to obtain in the world market the copper required by German industry. The same authority also holds that Germany can no longer count on the lead and zinc ores which before the war were imported by a ring of German firms from Australia, and made up 90 per cent of the total imports of these metals. In this case also Turkey may be helpful.

Will Organize Canadian Iron and Steel Industry

TORONTO, ONT., Sept. 16.—The War Trade Board of Canada will proceed at once to organize the iron and steel industry of the Dominion in accordance with the order in council just passed by the Canadian Government. The objects of that organization and order are to increase production of iron and steel, in view of the demand for such commodities in this country and the difficulty of securing supplies from the United States. Its aim is also to provide for the most efficient use of existing plants. To attain these ends the War Trade Board is empowered to employ a staff of engineers, steel experts and accountants to investigate the present steel and iron-producing facilities of the Dominion, to determine the manner in which those facilities can be most advantageously employed and to inventory the stocks of iron and steel available. The War Trade Board is to see that the output of Canadian blast furnaces, steel hearths and rolling mills is so distributed as to insure that the bulk of it will be turned into articles needed for carrying on the industries necessary to keep up the efforts at the front.

PUBLIC MUST HELP

Government Will Not Carry Entire Burden of Building Houses

WASHINGTON, Sept. 17.—The Government will not build houses to relieve congestion in industrial centers, until the local authorities have exhausted every opportunity to afford relief by other means. This announcement has been made by Otto M. Eidlitz, president of the United States Housing Corporation, which has been organized to meet these housing needs. Mr. Eidlitz declares the corporation will not give financial aid to private enterprises, but it will co-operate with them in securing governmental sanction for their projects, as well as the needed priority orders from the War Industries Board. Government funds, however, he declares will not be used to help any community until the corporation has been formally requested to give such aid by the department of the Government which is interested in the industrial output of that center.

"Many communities have the impression," he says, "that an unlimited national fund for housing has been voted. Some even imagine that this fund will be apportioned without a critical scrutiny of conditions in the locality seeking aid and without consideration of alternatives. That is a misconception.

"The Federal Government will build houses for war workers only as a measure of final relief. Not until every community concerned has exhausted its own resources should national aid be sought, or will it be granted.

"The need of the Government for materials, transportation and especially for man-power is incompatible with the normal amount of new construction both in regions where war work is being done and elsewhere. This general condition should be taken into account where the need of housing has become urgent, and appeals be made that citizens, whatever their prior customs, open their houses to boarders, except where there are adolescent children. Patriotism demands this with other sacrifices. Furthermore, all available buildings should be converted to provide reasonable housing facilities for war workers.

"In this connection it should be urged that communities which have profited by war orders may also well spend some of their new earnings upon homes for working people. Again, transportation should be improved where by so doing workers in outlying towns can be brought to the industries in the localities affected by a housing shortage.

"Furthermore, the United States Housing Corporation will not expend Government funds to build war houses except upon the request of that department of the Government which is interested in the products manufactured in the community in question. Where a community with war contracts complains of a housing famine, but has made no effort itself to remedy the situation, further Government contracts will assuredly be withheld."

Correspondence or requests for personal interviews, says Mr. Eidlitz, should be directed to the United States Housing Corporation, 613 G Street, N. W., Washington, D. C.

To relieve housing congestion in various industrial centers the following contracts have been made by the Bureau of Industrial Housing and Transportation:

A contract for 576 houses, for the same number of families, with the necessary utilities and town planning at Philadelphia, has been awarded to Roydhouse Arey Co., 1209 Fidelity Building, Philadelphia. The contract is on a fixed fee basis.

A contract for 328 houses, and the utilities and town planning at Seven Pines, Va., has been awarded to Owen-Ames-Kimball Co., Grand Rapids, Mich.

A contract for 119 houses, accommodating 174 families, and the utilities and town planning at Hammond, Ind., has been awarded to Wells Bros. Construction Co., Chicago. The contract is on a fixed fee basis.

A contract for 78 houses, accommodating 90 families, and the utilities and town planning at Bath, Me., has been awarded to the Leighton Mitchell Co., 95 Milk Street, Boston. The contract is on a fixed fee basis.

National Safety Council Meeting

ST. LOUIS, Sept. 17.—About 2000 are present at the annual meeting of the National Safety Council now in progress at the Hotel Statler. Director General McAdoo of the Railroad Administration and Director General Schwab of the Emergency Fleet Corporation both telegraphed regrets at their inability to attend on account of war work, but expressed support for the safety movement and urged that all "practice universal safety and help win the war." The keynote of the opening addresses was that the slogan "Safety is economy" is succeeded by the slogan that "Safety is patriotism."

The Safe Practices Committee, which has been issuing bulletins through the year on safety in ladder construction and use, safety in shafting work, safety in crane equipment and operation, etc., recommends a campaign to induce machine manufacturers to consider safety matters when machines are being designed so that special guards do not have to be devised by users. The Committee on Uniform Industrial Accident Statistics recommends 14 rules for standardizing such statistics. The Committee on Safety Education reports that 200 colleges are planning safety courses, and advice is asked of the National Safety Council by Japanese and Russian embassies, who plan to introduce a safety council in their countries.

In his presidential address, David Van Schaack, Aetna Life Insurance Co., said that the most significant development of the scope and activities of local councils has been the apparent success of the permanent secretary plan, put into effect January for the first time. This project has worked out so well at Pittsburgh and St. Louis, he said, that plans are now afoot for establishing permanent secretaries at Cleveland, Buffalo, Detroit and other centers.

In western Pennsylvania, where the permanent secretary plan was first put into effect, the local council has been able to organize plants for safety, to have personal work done and lectures given in plants, to hold meetings of existing safety engineers and to conduct a school for new ones, to hold meetings of superintendents and foremen and also of workmen, to carry the message of safety, through moving pictures, direct to the workmen of the individual plant. Its meetings this year have been attended by an aggregate of nearly 110,000 men, and it is conservatively estimated that it has reached, directly and indirectly, half a million of workmen. Systematic instruction in safety has been put into the city and county schools throughout the entire district. The permanent secretary has personally visited every one of the district's 1500 plants, whether affiliated with the National Safety Council or not.

Oil Engine Operators Wanted for Submarines

The Gas Engine Navy School at Columbia University, New York, is desirous of getting immediately about 1000 men for operating heavy oil and Diesel engines for the new submarines of the Navy. Applicants must have had an extended experience and may be between the ages of 21 and 35 years and will be enrolled as chief engineers, machinists and machinist mates. They will undergo training at Pelham Bay, New York, and for twelve weeks later at the New London Submarine Engineering School, New London, Conn., and then afterward sent to the various submarine bases. The pay, including bonus, amounts to about \$155 per month downward, and with the training are regarded as very desirable opportunities for men of draft age who have the qualifications. Names and addresses should be sent to Lieutenant-Commander C. E. Lucke at the Gas Engine School at Columbia University.

The Bethlehem Export Co., Inc., organized to deal in steel exports, is established at 15 Albany Street, New York. Frederick G. Hackenberg, formerly with Miljiken Brothers, Inc., Staten Island, and with Robert Grant, Woolworth Building, New York, is president. Frank A. Lannon is secretary and treasurer.

NEED MANY WOMEN WORKERS

by the Department of Labor Has Held Back—
Chairman Baruch Calls for Action

WASHINGTON, Sept. 17.—For months there has been growing necessity that the Government undertake a general encouragement of the recruiting of women to make up the serious labor shortage throughout the country. There was scarcely an industry, both in war work and outside of it, that did not feel the need for recruiting. So far, however, little has been done by the direct agencies of the Government. Chiefly it has been the Department of Labor that has held back. The reason for this delay has never been made public, but it has been possible to find out all the causes that have interfered with this important work at so critical a time.

Chairman Baruch of the War Industries Board has declared that the necessity for a call upon the women of the country has become so great that Government action must be taken. In discussing the serious labor shortage with newspaper correspondents he said he had been waiting for the proper Government authorities to take steps to relieve this need, but that if they continued to fail to act, other Governmental agencies would have to participate to force a speedier response in the emergency.

The Woman's Committee of the Council of National Defense has been trying to meet the situation, but it lacks the machinery for real action. It has issued a special appeal to the women of the country to participate in war work of the nation, but beyond its appeal it has been powerless.

Department of Labor Delays

The Department of Labor, with its specially organized War Labor Policies Board and its United States Employment Service, has specific authority in this matter, but so far it has not even been able to get its sundry publicity organs to do effective work on the problem. Plans for a campaign have been worked out at various times, but they have never been put into real operation. It is now reported that this is due to a difficulty that has arisen in one of the various subdivisions of the Department of Labor, the Woman in Industry Section, whose chief, Miss Nina Van Kleeck, has disagreed with the general policy mapped out by the Employment Service. Under the latter's program, a feminine member was to be added to each of the community labor boards throughout the country, whose duty it is to pass on local employment questions. However, the woman member of these boards was to be heard only on questions relating to female labor, while her colleagues could be heard on questions affecting men as well as women. This is said to have caused vital differences of opinion that were taken up to the office of Secretary Wilson himself. Meanwhile the industries that need female help had to wait.

Officials who have studied the question estimate that so far about 600,000 women have replaced men called to military service. They declare this number will have to be augmented by 2,000,000 before next summer industries essential to the prosecution of the war are kept in operation.

Many Names of Women Volunteers

Already the Council of National Defense, in response to a call for women to register for war work, has received 3,373,000 names. These women are willing to enter any work to which the Government may assign them. With these as a nucleus, there is no fear that a sufficient force will not be obtained. In addition, there are millions of others who could be called upon for service. It is felt that, from the large number throughout the country, the difficulty, which appears so big now, will be met shortly.

The special appeal which has been issued to the women of the nation by the Woman's Committee of the Council of National Defense says in part:

Women can and have successfully served as checkers and recordkeepers of baggage, mail carriers, clerks of every

variety, drivers of delivery wagons for produce and dry goods, conductors on street cars, motor drivers and drivers of traction plowing machines. All the occupations which do not require great strength or long training can be filled by them. There are many women equipped and ready to assume the direction of offices and help them to regain their former efficiency; there are other women who can and would do the unskilled work successfully.

England has at least a million in her banks, factories, munition plants, railroads and shipyards, who have never worked for wages before. What English women have done, American women can do. Victory "over there" means work "over here." Women who have never earned a dollar and will never need to, should heed the call of our country for workers at this time.

Employers are probably skeptical and women unwilling to force their services where they are unwelcome, but there need be no discomfort and few domestic problems if women will now fill the vacancies caused by the outgoing of husbands, sons, brothers and friends.

Employers, we ask you to give women a fair and complete trial. Women, we appeal to you to supply the workers to meet the widespread, wholesale demand. It is patriotic to serve in the trenches of France and Belgium; it may be equally so to drive a butcher's cart or keep the baggage records in a great station. Do not be content to do your bit. Do your all. "Keep the home wheels turning."

Revenue Bill Drags Along

WASHINGTON, Sept. 17.—A spirit of listless indifference continues to be the chief characteristic of the Congressional consideration of the \$8,000,000,000 revenue bill. Although it is by far the biggest revenue bill ever proposed in this or any other country, it has not succeeded in arousing any genuine exhibition of interest.

The measure is now being read, paragraph by paragraph, on the floor of the House, under the five minute rule, but neither the Ways and Means Committee nor the House is displaying any startling interest in the few amendments that are offered.

The Senate Finance Committee, which had announced that its hearings would end September 14, found it necessary to hear additional witnesses yesterday and finally to continue these hearings to-day.

Trumbull Steel Co. on War Orders

The Trumbull Steel Co., Warren, Ohio, has recently adjusted its output to conform to the restrictions placed by the Government for the conserving of steel for war essentials. J. T. Harrington, vice-president and a director of this company, says:

"The entire output of the Trumbull Steel Co. is now being devoted to war uses. It is furnishing steel for the Emergency Fleet Corporation, for aircraft production, aerial bombs, hand grenade and depth bombs and for the manufacture of tin plate. Outside of this it has very little surplus steel and this surplus is now being devoted to Government uses as directed by the war industries board."

Freyn, Bassett & Co., engineers, 643 Peoples Gas Building, Chicago, have been awarded a contract by the Carnegie Steel Co., Homestead works, for the installation of a Brassert gas-washing and drying unit for one of its Carrie blast furnaces. The unit, which will be built immediately, brings the total number of its kind installed or in course of construction to 63. The Carnegie Steel Co., also has placed a contract with Freyn, Bassett & Co., for the installation of a Dorr thickener in conjunction with the gas-washing unit for the clarification of the waste water and recovery of the suspended flue dust. A similar installation is now in operation at the South Works of the Illinois Steel Co., South Chicago, and another is being furnished to the Southeastern Iron Corporation at Goshen, Va.

C. W. Gridley has opened offices at 201 Devonshire Street, Boston, as district sales manager of the Liberty Steel Products Co., Inc., New York, handling carbon and high speed tool steel. A domestic sales department will carry nuts, bolts, spikes, etc., dealing largely with the shipbuilding industry and railroads.

ESTABLISHED 1855

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American Steel on the Battlefront

The time is now near at hand when the enormous preponderance of the United States and its co-belligerents over the Central Powers in the matter of iron and steel available will actually be felt on the battle front. In terms of pig iron that can be made, the advantage has been considerably more than two to one, and in terms of steel the proportion is at least as favorable, for in the United States as well as in the other Allied countries steel hinges upon pig iron.

Earlier in our participation in the war this preponderance was not felt, in actual fighting strength on the battle line, by reason of the greater distance over which it was necessary for our supplies to travel, and by reason of the large quantities of steel it was necessary to tie up in providing transportation and other facilities. Last year the proportion of shell steel to total steel devoted to war purposes, direct and indirect, did not increase; but month by month lately it has grown, and it is destined to increase greatly in the next few months. The major portion of the permanent work that had to be done to establish communication between the American farm and factory and the western front has now been done or definitely provided for. The manufacture of steel shells has not yet reached its limit, and the manufacture of semi-steel shells is to begin on a large scale. It should be pointed out that the use of semi-steel shells does not represent much reinforcement of the steel supply, as such. In recent months the supply of steel available has hinged upon the pig-iron supply, and semi-steel shells of 30 per cent steel scrap and 70 per cent pig iron do not mean much, if any, more product than if the materials are used in the manufacture of regular steel shells. There is represented, on the other hand, a very considerable saving in the amount of labor involved.

There was a time, earlier in the war, when the use of one hundred or two hundred thousand shells in a brief offensive was regarded as a spectacular consumption of such material. To-day the operations are on a very much larger scale, and General Pershing's demand for 100,000 three-inch shells a day is not regarded as especially remarkable. The program for semi-steel shells appears to

be 33,000,000 in ten months, of various sizes, that itself being more than 100,000 a day.

To the iron and steel industry it is of rare interest that a large part of these munitions is likely to be used in a major operation developing from the offensive so auspiciously begun last week in the wiping out of the St. Mihiel salient. Before the American and French forces in that quarter lie a rich section of the Minette iron ore region, by far the chief dependence of the Central Powers for iron and steel. Every ton employed in that direction will perform a double function, helping at once to destroy the military forces of the enemy and to deprive him of iron and steel resources. If efficiency is the watchword, it is shown in such employment of our iron and steel. The general strategy of the war has been to destroy the German military power. The disadvantage under which a ton of Allied steel labored has been the large proportion of it that had to be used for transporting another portion. In the Lorraine region this disadvantage is reduced to a minimum, because the importance of a very few miles of advance is greater there than anywhere else. This was recognized long ago in the assignment, for some time kept secret, of this sector to the American forces.

Better Coke, Not More Furnaces

Here and there, in the discussion of the acute shortage of pig iron, the suggestion has come up that more blast furnaces be built at once. The usual reply has been that it ordinarily takes a year to build a modern blast furnace, and that the need for more pig iron may not continue to be acute beyond that period. Thus some of the furnaces that might be built to meet the present shortage might prove supernumerary in their earlier years.

The fact that needs to be most emphasized in connection with pig iron production is that the furnaces now in blast are by no means getting the output of which they are capable. Indeed, they are falling much behind their performance in 1917. In July and August of this year pig iron output was at the rate of about 110,000 tons a day. Going back to a period of approximately that output in 1917, we find that the average production in April, May and June, last year, was 110,135 tons. Yet to

maintain approximately the same output in July and August, this year, it took from 25 to 30 more blast furnaces. Let us take May, 1917, and August, 1918, for comparison. In the former month the pig iron output was 110,283 tons a day; last month the output was 109,341 tons a day. In May, 1917, 40 furnaces were in blast, in August, 1918, the average number of furnaces in blast was 367. The statistics of THE IRON AGE show that 13 furnaces were in blast in May, 1917, which were out for lining or for other reasons in August, 1918. On the other hand, 40 furnaces were in blast last month which were not in blast in May, 1917. These 40 furnaces have a daily capacity of 10,830 tons. The furnaces in blast in May, 1917, but out of blast in August, 1918, produced at the rate of 2570 tons a day.

Deducting the capacity of the 13 furnaces from the capacity of the 40 furnaces leaves a net increase of 8260 tons per day. This represents 3,014,900 tons a year.

In other words, output in August, 1918, should have been at a yearly rate of 3,000,000 tons more than it actually was. Thus if the 327 furnaces that were in blast in both May, 1917, and August, 1918, had produced last month at the same rate as in May, 1917, the pig iron output for August, with 40 additional furnaces in blast, would have been 160 tons a day, or 3,014,900 tons a year, more than that of May, 1917. The fact is that last month's output was 897 tons a day less than in May, 1917.

All testimony is that poorer coke has been furnished the blast furnaces for many months than they get in normal times. It is evident also that poorer coke is being furnished than was furnished in April, May and June, 1917. Higher sulphur and higher ash in the coke are the cause of reduced output of pig iron. The remedy for this is not more blast furnaces but better attention to the washing and sorting of coal from which coke is made. Why hesitate for the building of more blast furnaces when an increase of more than 3,000,000 tons a year could be made in pig iron output if only the furnaces were as well served with coke and with as good coke in April, May and June, 1917?

The New England Labor Troubles

The letter of President Wilson to the Bridgeport strikers, considered in connection with the stories of the Smith & Wesson and the Bridgeport controversies, places the employers of the two cities in a much more favorable light than those employees of Bridgeport who, in the language of the President, were guilty of "disloyalty and dishonor." After agreeing to abide by the decision of the National War Labor Board the men struck in defiance of their own union and their country.

What, on the other hand, was the attitude of the owners of the Smith & Wesson Co.? Whether right or wrong in their position, they believed they were right in insisting upon the maintenance of the non-union basis in their plant. They were fully of the opinion that the right to stand up for

the individual contract was theirs and that the efforts of commissioners of the War Labor Board in trying to induce employees to join the union, thus subverting the system of employment, was contrary to the law as laid down by the Supreme Court of the United States. And yet these patriotic employers did not do as the Bridgeport strikers did. They did not say that the plant at Springfield would be closed and all manufacturing stopped. They said that they would not forsake the principles to which they believed the success of the company for many years had been due and would not assume responsibility for the results of following the policies of the War Labor Board; but they would place the plant in the hands of the Government and do all in their power to assist the Government in operating it. In the letter to Secretary Baker, the company said:

Rather than voluntarily to continue to conduct, under the conditions laid down by the War Labor Board, a business which it has built up to a point of highest efficiency, it prefers to see such business lawfully taken over and conducted by the Government for the rest of the war. If such a course is adopted by the War Department, the individual members now comprising the management will be pleased to assist any Government officer in charge, in every way to conduct the said business as advantageously for the Government as is possible with such a system in force.

We take this position because the company is convinced that the adoption of any such scheme as that outlined by the War Labor Board would result in such demoralization of business morale, such dissatisfaction of a large number of loyal employees who have been in the service of the company for many years, such lack of respect for the rightful authority of the present managers upon the part of an aggressive minority which has in a comparatively recent period found employment with the company—in some instances, as the company is informed, for the express purpose of unionizing the plant—as to render the position of such managers in the company intolerable; and that it would further result in such loss of efficiency in the production of war material that the management cannot and will not assume responsibility therefor.

President Wilson speaks of the action of the company as "flaunting" the rules of the National War Labor Board—rather poor English for one usually so skillful in the use of words—and refers to the employers as "recalcitrant"; but their attitude certainly contrasts favorably with the conduct of the strikers, which was akin to treason. Even more unselfish and patriotic was the action of the Bridgeport employers in promptly acquiescing in the award, although they believed some parts of it to be unwise and unjust.

The lesson of the recent experiences in New England for employers and employees is that the country demands production, uninterrupted production to the limit of the capacities of plants and men. The armies of the United States and its Allies, which are making magnificent progress, must be supported to the fullest extent possible. The employer who, after exhausting all proper methods to maintain his position, refuses to allow his plant to be operated unless his own ideas are adhered to and the employee who strikes because he cannot have his own way as to wages or working conditions are alike worthy of condemnation and

should be compelled to do their part in the winning of the war. When millions of men are offering their lives for their country, those who stay at home have no right to place allegiance to their own notions above loyalty to the flag.

Electric Steel Developments

The electric furnace may completely alter Great Britain's steel practice and conditions. That that country may become independent of imports of Swedish iron and steel and still maintain after the war her output of high-class material, is the significant statement of a British metallurgist. Donald F. Campbell, in discussing "Electric Steel Development" on another page of this issue, goes so far as to say that the approaching exhaustion of British high-grade ores need cause no alarm. He attributes the changed prospects to the unusual growth of the electric steel industry in Great Britain, with an output 40 times that before the war. His prediction is based on the fact that electricity makes it possible to use inferior ores and manufacture steel of great purity. Scandinavian imports will practically cease and the high-grade British steel industry will be self-supporting, he predicts.

Great Britain has been compelled to expand its basic open-hearth output as the war has progressed, but it has been slow to develop the possibilities of the electric furnace as a refiner of hot metal. Herein lies the explanation of the predictions of Mr. Campbell. The value of the electric process is not yet appreciated in its broadest aspect—as a refiner on a large scale, in 30 to 40-ton furnaces, of hot metal from the open-hearth or Bessemer, or both. Quality steel in quantity is thus assured and the United States leads the world to-day in teaching this lesson. Great Britain has not yet grasped it. When she does, the results will accord with the prophecies noted above.

But the statement applies also to other countries. It is probable that the electric process will "give new life to the basic-Bessemer process of Thomas and Gilchrist throughout the Minette region of Lorraine and cause the enormous deposits of phosphoric ores in Cleveland and the Midlands to be a vast source of pure steel and possibly also of phosphates for use as fertilizers." Wherever lies ultimate control of the Lorraine fields, this statement opens up great possibilities. The nation that applies electric refining in its broad aspect to steel from these ores will attain a prominent position in the international steel trade. The United States is already well along in this broad development, but not because of any exhaustion of purer ores. It is also interesting to speculate on the effect the development of this process may have on Germany's post-war position as a steel producer.

The maximum size of electric furnaces is not likely to be more than 30 tons, according to Mr. Campbell, and then only for use in refining hot metal. There is a difference of opinion on this point. Plans are already under consideration for the building of still larger furnaces, perhaps of 40 tons capacity, in this country. Apparently no limit can yet be set.

The author's statement is that a 1500-k.v.a. furnace is as efficient as any, and that 77 out of 169

of one type erected in the United States and Great Britain are of this capacity. This is borne out by the latest experience and testimony, though it is now understood that this limit may be reduced.

That a kilowatt-hour of water power is little more than the cost of the best coal-fired generating stations where the steel furnaces have a load of about 45 per cent is a surprising statement, especially to those who expect cheap water power to act as a stimulus to the electric steel industry. The average electric steel furnace of one type in this country has a load of nearer 50 per cent, and perhaps a matter of opinion which power is cheaper or more advantageous.

The development of this industry has been phenomenal in two continents, but its future depends on a broad viewpoint on the part of power-producing companies and the possibility of cheaper current, also on a complete grasp by chemists and metallurgists of the vast possibilities of intense heat in a neutral atmosphere.

Steel Ingot Output in August

The production of steel ingots in August, according to statistics compiled by the American Iron and Steel Institute, was almost identical with that of June. There were 27 working days in August against only 26 in June. The figures reported by 29 companies who made 88.14 per cent of the steel ingot production in 1916 totaled 3,083,563 gross tons for August, against 3,113,635 tons in July and 3,083,446 tons in June. The companies which do not report operated at a corresponding rate, the country's total production in August was 3,498,483 tons. On the basis of these reports the August production represents an annual output of 40,038,000 tons, calculated for 309 working days. July output was at an annual rate of 41,984,000 tons. Thus August showed a sharper falling off from July than in pig iron. The table below gives the production of 29 companies for the past 15 months:

Monthly Production of Steel Ingots—Gross Tons

Months	Open Hearth	Bessemer	All Other	Total
June, 1917	2,265,772	809,552	8,665	3,083,989
July	2,152,479	777,171	9,465	2,939,115
August	2,251,013	863,873	8,331	3,123,217
September	2,195,556	710,964	6,629	2,913,149
October	2,475,754	870,494	5,687	3,351,935
November	2,384,218	772,489	9,550	3,166,257
December	2,195,832	524,084	13,806	2,733,722
January, 1918	1,763,356	429,588	10,901	2,193,845
February	1,805,233	454,457	14,051	2,273,741
March	2,331,048	763,255	16,078	3,110,381
April	2,377,974	769,249	16,187	3,163,410
May	2,475,131	796,244	15,838	3,287,213
June	2,281,718	786,380	15,348	3,083,446
July	2,311,545	784,997	17,093	3,113,635
August	2,299,060	766,860	17,563	3,083,483

Brass Manufacturers Will Conserve

At the quarterly meeting of the National Association of Brass Manufacturers, held at the Hollen Hotel, Cleveland, Sept. 11-13, it was decided to follow the request of the Government and eliminate a large number of the items in the lines of plumbers' brass goods now manufactured. The manufacturers agreed to cut these items from 1200 to less than 100. The manufacture of all fancy brass fixtures will be continued for the duration of the war.

In addition to members of the association, outside manufacturers of plumbers' brass goods were invited and about 50 manufacturers were present.

H. Mueller of the Mueller Mfg. Co., Decatur, was elected to represent the War Service Committee of the plumbing industry which operates under the Material Section of the War Industries Board, of which Richard L. Humphries is chairman.

The Standard Car Construction Co., Sharon, Pa., is building for the Government a considerable number of tank cars for shipment to France.

Tremendous Demand for Barbed Wire

WASHINGTON, Sept. 18.—(By wire).—War orders have forced a speeding up of the barbed-wire industries of the country. The exact amount called for by the War Department and by General Pershing as well as the Allied Governments in Europe cannot, of course, be made public, but the rapid advance of our armies calls for vast supplies of barbed wire. Until one has seen the masses of barbed wire that are needed to construct a modern wire entanglement, sometimes 300 yards deep, it is difficult to understand where all the barbed wire goes.

Director Replogle, chief of the Steel Division of the War Industries Board, called the barbed-wire manufacturers of the country to Washington last week to urge them to produce every pound possible. The estimated production capacity of the present plants is 50,000 tons a month. No new extensions, however, are to be built.

The United States Bureau of Labor Statistics, which has been making an investigation of the cost of living in the principal industrial centers, will extend its work to Pittsburgh on Thursday. Inquiries are already in progress at Baltimore, Scranton and New York.

The War Industries Board to-day ordered the elimination of all metal corner blocks for drawers, door slides, door locks, metal feet and metal wheel casters from all classes of furniture hereafter manufactured. The board also ordered all motion picture manufacturers to reduce the weight of their machines as far as practicable and to substitute less essential materials for brass, aluminum and steel.

American Iron and Steel Institute Fall Meeting Will Be Omitted

At the meeting of the board of directors of the American Iron and Steel Institute on Monday Sept. 16, it was decided that, in view of the tremendous demands upon the institute by the Government for war purposes, the general meeting usually held in October would be omitted for this year.

The limited membership was increased from 1400 to 1500 active members and from 400 to 500 associate members.

The following were elected as members:

Frank H. Colladay, Trumbull Steel Co., Greenwich, Conn.
Robert I. Ingalls, Ingalls Iron Works Co., Birmingham, Ala.
Walter Butler, Butler Brothers, St. Paul, Minn.
William Decou, Jr., Richard DeCou Co., Philadelphia.
Emory Evans Smith, Smith, Emory & Co., San Francisco.
James H. Slawson, Joliet Railway Supply Co., Chicago.
Harrison S. Matthews, Iron & Railway Co., Dayton, Tenn.
Thomas R. Heyward, Jr., Heyward Steel Co., Pittsburgh.
William H. Bischoff, Bethlehem Steel Co., Sydney, N. S.
Arthur Forbes Braid, Metallurgical Eng., Metal & Therm Corporation, New York.
Charles D. Rawstorne, Freyn, Brassert & Co., Chicago.
Raymond A. Lackner, Neely Nut & Bolt Co., Pittsburgh.
Samuel Siddall, Warren Iron & Steel Co., Warren, Ohio.
Edgar F. Price, Electro Metallurgical Engineer, Metal & Therm Corporation.
Edgar E. Jamison, Edgar Jamison Steel Co., San Francisco.
Edwin S. Church, Wellman-Seaver-Morgan Co., Cleveland.

Fabricated Steel Business in August

The volume of contracting in bridge and structural work in the country in August amounted to 57 per cent of the capacity of the shops against 116½ per cent put under contract in July. The difference represents a booking of fabricated ship work in July for some months to come; in fact, in some quarters estimated to be sufficient to keep the shops busy on ship work through 1919. The figures correspond to a total contracting in August of about 102,500 tons against 210,000 tons in July. So far this year the amount of business booked is 916,000 tons or 114,500 per month. The indications are that the business for 1918 will approximate that done in 1917, and with the difficulty of getting steel and of increasing output from the labor standpoint, the fabricating shops, it is believed, will be busily engaged at present rates of output for the rest of the year.

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"The Iron Age" and Its Readers

Complying with the Government's request for the conservation of paper, both in view of the limited supply of that product and the necessity of cutting down the demands upon transportation, THE IRON AGE was printed last week for the first time on a size of paper giving less margin. A further saving, also in response to the call made upon all publications, will be secured in a slight reduction in the weight of paper used. These changes are not of our choosing, but they are willingly made in the common interest and for reasons that in these days take precedence over all else.

Questions relating to methods of selling American iron and steel products and machinery in France after the war were discussed in a highly interesting manner in THE IRON AGE of Sept. 5 by Pierce C. Williams, commercial attaché, American Embassy in Paris. The article will continue to be perused and studied in this country and efforts made to meet the requirements of collective selling which the attaché declares will be necessary.

NEW PREFERENCE LIST

Many Wish to Be Added—Form of Report
Required for 6500 Plants

WASHINGTON, Sept. 17.—The new preference list issued by the War Industries Board has proved the most important schedule proclaimed by that body. A long list of letters and telegrams has come to it from plants and industries throughout the country which claim that they should have been added to the list or, if on it, given a higher rating.

It took three months' work to make up the list. After that period, the board insists that all possible care was taken to make it final. It is ready, however, to consider every case on its merits, and it is not impossible that changes will be made later. For the present, however, almost every case is being cared for by the supplemental preference list of 6500 plants not included in the general industrial preference list. This list of plants is exceedingly comprehensive, but it is growing from day to day as new factories convince the Priorities Commission of the board that they are entitled to special consideration.

P. L. Form No. 3

WAR INDUSTRIES BOARD
PRIORITIES DIVISION
WASHINGTON

MONTHLY REPORT OF OPERATION

MONTH OF _____, 191

INSTRUCTIONS

The Priorities Board will be guided by this report in considering the merits of the plant for continued inclusion in the Preference List of Industries and Plants; therefore, it is important that it be mailed as promptly as possible after the first of each month. Plants whose reports are not received by the 15th of the month will be dropped from the list.

Separate report should be made for each plant.
See reverse side for "Definitions of terms."

Name of company.....

Location of plant.....

	Percentage for month.	Close approximation for succeeding 60 days
Distribution of production:.....		
1. Direct Government orders.....		
2. Indirect Government orders.....		
3. Work of exceptional or national importance		
(As defined on reverse side of this blank.)		
4. All other work.....		
TOTAL....	100 %	100 %

State unit of production used in arriving at the above percentages.....

Further information conceived to be of importance in connection with this report.....

.....

.....

.....

The undersigned being first duly sworn on oath, says that the statements contained in the foregoing are full, true, and correct.

Subscribed and sworn to before me this.....

day of..... 191

(Name of company.)

Notary Public

By

(Name of official.)

in and for.....

3-3754

The Priorities Commission, as well as the Conservation Division of the War Industries Board, is ready to consider applications from any industry or from any plant on which there has not already been a ruling. The commission is acting throughout in accordance with the program which it announced in July "to all producers, manufacturers, dealers and consumers." It was circular No. 5 and was printed in full in the August 1 issue of THE IRON AGE, page 306.

Although that circular covered primarily the question of priorities policies and regulations governing the distribution of steel and steel products, its principles apply to the whole question of the new preference lists. In the announcement by the War Industries Board of preference lists of industries and plants, it required each plant to make monthly reports of its activities on a special blank—P. L. Form No. 3—under penalty of being dropped from the list. This has caused some confusion, for it was interpreted by some manufacturers to be a requirement covering every plant in the preferred industries. It is explained, however, by Chairman Baruch that this requirement does not apply to manufacturers listed in the general preference list of industries, but only to the 6500 individual plants in the preferential list.

Details of the blank "P. L. Form No. 3," however, of importance to the entire industry. The text of this blank is shown on page 708.

War Service Committees

WASHINGTON, Sept. 17.—The Chamber of Commerce of the United States has issued membership list of an important series of war service committees.

MALLEABLE IRON MANUFACTURERS.—Frank J. Lanan, Fort Pitt Malleable Iron Co., Pittsburgh, chairman; Henry F. Pope, National Malleable Castings Co., Cleveland; John C. Haswell, The Dayton Malleable Iron Co., Dayton, Ohio; Frederick L. Sivy, the Northwestern Malleable Iron Co., Milwaukee, Wis.; John E. Walker, Wilmington Malleable Iron Works, Wilmington, Del., and Robert E. Belt, Penton Building, Cleveland, secretary.

TYPEWRITER MANUFACTURERS.—J. T. Underwood, Underwood Typewriter Co., 30 Vesey St., New York, chairman; Frank N. Kondolf, Remington Typewriter Co., 374 Broadway, New York, vice-chairman; Carleton Brown, Corona Typewriter Co., 129 W. 42nd St., New York; W. L. Smith, L. C. Smith & Bros. Typewriter Co., Syracuse, N. Y.; George E. Smith, Royal Typewriter Co., 364 Broadway, New York; L. G. Julihn, Elliott-Fisher Co., 217 Broadway, New York; Lawrence Williams, Oliver Typewriter Co., Oliver Bldg., Chicago; and Clinton L. Rossiter, Underwood Typewriter Co., 30 Vesey St., New York, secretary, and C. G. Young, war service committee of the typewriter industry, Woolworth Bldg., New York, executive secretary.

BEDSTEAD AND SPRING BED MANUFACTURERS.—A. F. Carpenter, Rome Metallic Bedstead Co., Rome, N. Y., chairman; John Trounstone, Greenpoint Metallic Bed Co., Brooklyn; Z. G. Simmons, The Simmons Co., Kenosha, Wis.; George J. Sowter, Gassau-Thompson Co., Brooklyn; J. Hoffman, Hub Metal Bed Co., Boston; Arthur F. Bent, Bent Mfg. Co., Boston, and J. W. Bonebrake, 41 Park Row, New York, secretary and treasurer.

Manufacturers of elevators are meeting in Washington to-day to form a war service committee. Representatives of the feldspar industry and manufacturers of furniture are meeting in Cincinnati for the same purpose. To-morrow the manufacturers of seamless wire will meet in New York. Dates for other meetings follow:

Sept. 19, manufacturers of road machinery, in Washington.

Sept. 20, manufacturers of adding machines and of cap fasteners, in Washington.

Sept. 24, knitting machine manufacturers and makers of pipe fittings and valves, at Washington.

Sept. 26, manufacturers of scales and balances, at Washington.

Dates for other industries will be announced later.

To Serve Iron Age Readers

THE IRON AGE has now ready for mailing, entirely free of charge except for postage, the following documents, which may be described as documents A, B, C and D.

A—New Price Booklet

The American Iron and Steel Institute's new edition of its booklet on maximum prices on iron and steel products as agreed upon by Government officials and committees of the institute, together with prices, extras, and differentials recommended by its Committee on Steel and Steel Products. THE IRON AGE will send copy to any subscriber on receipt of the postage, which is 18c., for one copy, or 30c. for two copies, first-class postage; or, 3c. for one copy and 5c. for two copies, third-class postage.

B—Supplement for Price Booklet

Reprint of price changes published in THE IRON AGE of Sept. 12. These should be pasted on blank pages of the new booklet of the American Iron and Steel Institute. The booklet is of the same width as the column of THE IRON AGE and the new prices can be easily inserted. Send three-cent stamp.

C—Priority Rules Pamphlet

Pamphlet giving rules governing priority in production issued by the Priorities Division of the War Industries Board—circular No. 4, superseding all previous rules and regulations—with some supplementary matter on priorities. The pamphlet will be sent to any subscriber upon receipt of 6c. in stamps, which will cover postage for one or two copies. The postage on three copies is 9c.; four copies, 12c.; six copies, 18c.; seven copies, 21c.; eight or nine copies, 24c., and on 10 copies, 27c.

D—Supplement to Priority Pamphlet

Reprint of article published in THE IRON AGE of Sept. 12, giving preference list of industries issued by the War Industries Board and Procedure for Exemption of Workers. Send three-cent stamp.

Director General of Railroads McAdoo visited last week the shops of the Pennsylvania Railroad, at Altoona, Pa., and made an address to the shop men, in which he said: "Every bad locomotive is a Prussian soldier. Every idle locomotive is working for the Kaiser. Every live locomotive is an American soldier, every moving locomotive is working for Uncle Sam. Let us get on top of the Prussian locomotives and make American soldiers out of them."

Satisfactory progress is being made with the new plant of the Peter Lyall Construction Co., which is being erected on the east end of the island, Montreal, Quebec. This plant will be confined mainly to the manufacture of shells for the United States Government.

Iron and Steel Markets

PRESSING FOR WAR STEEL

American Army Needs Calling for Prompt Shipments

Price Conference at Washington Thursday— Opposition to Advances

The close relation between steel works output in the United States and the steady pushing forward of American lines in France has been emphasized in the past week. Manufacturers of barbed wire were called to Washington to plan for quickly increasing output, after many weeks of restricted production. The entire capacity, which is 50,000 tons a month, may soon be engaged. Besides American requirements a new call has come for 60,000 tons for Italy and 65,000 tons for Great Britain, and the latter amount may be increased to 90,000 tons.

One Pittsburgh mill, on an urgent order for 80-lb. rails for France received last Wednesday rolled 20,000 tons before the end of the week. There is an entirely unprecedented volume of shell steel orders; sheets are wanted in large quantities for trench shelters and rolling kitchens, and in all ways the needs of the American army have been pressed upon the steel mills, until for one week the incessant call for ship plates has become an undertone.

There has been a week of meetings in New York preparatory to the quarterly price conference in Washington, now set for Sept. 19 instead of the day preceding. Lake Superior iron ore producers, particularly underground miners, have formulated their argument for a second advance. Eastern iron ore companies have come together for the first time and will be represented at the price table. Wire companies have agreed that barbed wire should be advanced \$5 a ton and rails by a like amount. The smaller steel makers who buy their pig iron, and who represent about 10 per cent of the finished material output in important lines, will make a stronger appeal than at any previous conference.

Foundry pig iron producers decided at their meeting last Thursday that their case must be presented separately at Washington and not through the general steel committee. Regional prices are being agitated and the Southern furnace companies are especially insistent.

At Washington, while the cry still goes up for greater production, there is little encouragement to the pleas for higher prices, though some producers, both of pig iron and finished steel, are claiming that in the last quarter of the year their costs will be higher than present prices.

Attempts to bring steel plants under the rulings of the National War Labor Board continue and the situation is tense, not so much from actual differences between the manufacturers and employees as from the efforts from without to raise issues that will bring Government interference.

Chicago at last reports definite announcements of the prices secured by agricultural implementers through Government intervention, including per cent discount on shafting and disk steel at An order for 15,000 tons of rivets is being placed this week for Hog Island. Government absorption of bolt and nut as well as rivet output is more complete.

Jobbers have not been encouraged by the developments as to army requirements. Their classification gives less and less promise of replacements as the revised schedule of imperial shipments to France keeps mounting.

The price of domestic manganese ore is involved in a conference being held to-day (Wednesday) the amount of Brazilian ore to be imported in remaining months of the year. If these imports are reduced, exports to South America must be down, as manganese is now simply return cargo ships that will not be allowed to come back light. If manganese imports from Brazil are reduced, higher prices for domestic ores and for ferro-manganese will be urged.

Structural orders in August amounted to 57 per cent of the country's fabricating capacity, while average for the first six months of the year was 45 per cent. July, due to the placing of accumulative shipyard fabrication, made the peak of the year at 210,000 tons, or 116½ per cent of a month's capacity.

The August output of steel ingots is estimated at 3,498,000 tons for 27 working days against 3,560,000 tons for 26 days in July. Steel works production thus suffered to a greater extent last month than that of pig iron.

An unusual dispensation has been granted in the scrap market. Iron rolling mills, finding that bittings and turnings of the sort they use could not be had at \$19, the official price, as long as steel works stood ready to pay that figure for the general run of such scrap, permits were granted various rolling mills to pay up to \$21. These permits are subject to cancellation when a mill has secured a sufficient supply.

Pittsburgh

PITTSBURGH, Sept. 17 (By Wire)

As yet no advices have been received here of the action taken at the meeting of iron and steel manufacturers held in New York on Monday, Sept. 16, for the purpose of defining the position which the committee of the American Iron and Steel Institute will take when it meets the Price Fixing Committee of the War Industries Board on Thursday, Sept. 19. It is understood that most of the demands for higher prices on steel products come from the smaller producers, whose costs are higher than the larger self-contained companies. The latter have a distinct advantage over the smaller steel concerns, and it is evident they have been making great deal of money at present prices of steel products. Recent financial reports sent out by them fully attest to this. It is said by those who are in close touch with the situation at Washington that the Government will hesitate a good deal before it will agree to advance prices on any steel products.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Sept. 17 1918	Sept. 10 1918	Aug. 13 1918	Sept. 1917
No. 2 N. Philadelphia.....	\$34.40	\$34.40	\$34.40	\$50.00
No. 2 Valley furnace.....	33.00	33.00	33.00	50.00
No. 2 Southern, Cincinnati.	36.60	36.60	36.60	49.90
No. 2 Birmingham, Ala....	33.00	33.00	33.00	47.00
No. 2 furnace, Chicago*....	33.00	33.00	33.00	54.00
Basic, deliv., eastern Pa....	32.90	32.90	32.90	48.00
Basic, Valley furnace.....	32.00	32.00	32.00	42.00
Basic, Pittsburgh.....	36.60	36.60	36.60	50.95
Bessemer, Pittsburgh.....	33.50	33.50	33.50	55.00
Malleable, Bess., Chicago*..	33.50	33.50	33.50	51.00
Malleable Valley.....	33.50	33.50	33.50	51.00
Gray forge, Pittsburgh....	33.40	33.40	33.40	46.95
L. S. charcoal, Chicago....	37.85	37.85	37.85	58.00

Rails, Billets, Etc., Per Gross Ton:	Sept. 17 1918	Sept. 10 1918	Aug. 13 1918	Sept. 1917
Bess. rails, heavy, at mill..	55.00	55.00	55.00	38.00
O-h. rails, heavy, at mill..	57.00	57.00	57.00	40.00
Bess. billets, Pittsburgh....	47.50	47.50	47.50	65.00
O-h. billets, Pittsburgh....	47.50	47.50	47.50	65.00
O-h. sheet bars, P'gh....	51.00	51.00	51.00	75.00
Forging billets, base, P'gh..	60.00	60.00	60.00	100.00
O-h. billets, Philadelphia..	51.30	51.30	51.30	75.00
Wire rods, Pittsburgh....	57.00	57.00	57.00	90.00

Finished Iron and Steel,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia....	3.73	3.73	3.73	4.935	
Iron bars, Pittsburgh.....	3.50	3.50	3.50	4.75	
Iron bars, Chicago.....	3.50	3.50	3.50	4.50	
Steel bars, Pittsburgh.....	2.90	2.90	2.90	4.00	
Steel bars, New York.....	3.145	3.145	3.145	4.195	
Tank plates, Pittsburgh....	3.25	3.25	3.25	8.00	
Tank plates, New York....	3.495	3.495	3.495	8.195	
Beams, etc., Pittsburgh....	3.00	3.00	3.00	4.00	
Beams, etc., New York....	3.245	3.245	3.245	4.445	
Skelp, grooved steel, P'gh..	2.90	2.90	2.90	...	
Skelp, sheared steel, P'gh..	3.25	3.25	3.25	...	
Steel hoops, Pittsburgh....	3.50	3.50	3.50	5.75	

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,	Sept. 17 1918	Sept. 10 1918	Aug. 13 1918	Sept. 1917
Per Lb. to Large Buyers: Cents				
Sheets, black, No. 28, P'gh.	5.00	5.00	5.00	8.50
Sheets, galv., No. 28, P'gh.	6.25	6.25	6.25	9.50
Wire nails, Pittsburgh....	3.50	3.50	3.50	4.00
Cut nails, Pittsburgh.....	4.00	4.00	4.00	4.65
Fence wire, base, P'gh....	3.25	3.25	3.25	3.95
Barb wire, galv., P'gh....	4.35	4.35	4.35	4.85

Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$29.00	\$29.00	\$29.00	\$32.50
Carwheels, Philadelphia....	29.00	29.00	29.00	32.00
Heavy steel scrap, P'gh....	29.00	29.00	29.00	32.00
Heavy steel scrap, Phila....	29.00	29.00	29.00	30.00
Heavy steel scrap, Ch'go....	29.00	29.00	29.00	31.00
No. 1 cast, Pittsburgh....	29.00	29.00	29.00	30.00
No. 1 cast, Philadelphia....	29.00	29.00	29.00	30.00
No. 1 cast, Ch'go, net ton..	30.00	30.00	29.00	24.00
No. 1 R.R. wrot., Phila....	34.00	34.00	34.00	43.00
No. 1 R.R. wrot., Ch'go, net	29.75	29.75	29.75	34.00

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt.....	\$6.00	\$6.00	\$6.00	\$12.50
Furnace coke, future.....	6.00	6.00	6.00	8.50
Foundry coke, prompt.....	7.00	7.00	7.00	13.50
Foundry coke, future.....	7.00	7.00	7.00	12.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York....	26.00	26.00	26.00	26.25
Electrolytic copper, N. Y..	26.00	26.00	26.00	26.25
Spelter, St. Louis.....	9.50	9.25	8.50	8.12 1/2
Spelter, New York.....	9.85	9.50	8.80	8.37 1/2
Lead, St. Louis.....	7.75	7.75	7.75	7.87 1/2
Lead, New York.....	8.05	8.05	8.05	8.00
Tin, New York.....	78.50	83.00	94.00	61.75
Antimony (Asiatic), N. Y..	14.00	14.00	13.00	15.00
Tin plate, 100-lb. box, P'gh	\$7.75	\$7.75	\$7.75	\$12.00

The success of the American and Allied armies in the past month has greatly increased the demand for quick shipments of war steel of all kinds to France. In their retreat the German army has taken up railroad tracks and removed supplies which have to be replaced by the Allied armies as it advances on Germany, and the authorities at Washington have recently notified steel manufacturers that they must still further speed up production of steel being used in France, if the victorious armies are to continue driving the Germans back and get into Germany. The trade here awaits with much interest the action that will likely be taken this week in Washington in regard to prices, and the impression is very strong that few changes will be made. Local conditions are very quiet and are bound to continue so long as Pittsburgh industrial plants are working 100 per cent for the Government, which they are now doing, and will likely continue doing as long as the war lasts. Various plans are under way to increase the supply of labor, which is very short here and also in the valleys.

Pig Iron.—At the meeting of iron and steel manufacturers in New York on Monday, Sept. 16, merchant pig iron producers, notably from the South, presented their case, giving reasons why they feel they should have higher prices on pig iron for last quarter and thereafter. It is possible that some other plan of fixing prices on pig iron may be adopted, notably for the Southern furnaces, but the trade here does not believe there will be any advance made in prices on Bessemer, basic or foundry iron. The entire output of pig iron that is not used by the steel companies is being allocated by the Government, so that no new sales are being made. It is claimed that very little iron has been sold for first half of next year delivery. We quote:

Basic pig iron, \$32; Bessemer, \$35.20; gray forge, \$32; No. 2 foundry, \$33; No. 3 foundry, \$32.50, and malleable \$33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being \$1.40 per ton.

Billets and Sheet Bars.—While operations of Bessemer and open-hearth steel mills in the Pittsburgh, Youngstown and other districts is reported to be close

to 90 per cent of rated ingot capacity, yet the supply of sheet bars for sheet and tin plate mills seems to be growing steadily less, and last week one large interest that makes sheet and tin plate did not receive a single shipment of sheet bars for its sheet mills. All the sheet bars being used are of Bessemer steel, the entire output of open-hearth being used by the mills in making war essentials. Occasionally some discard steel comes on the market, but is usually taken up as soon as it is offered.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$47.50, and bars \$51, forging ingots \$73, and forging billets \$60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Ferroalloys.—Most consumers seem to have pretty well covered their needs for first half of next year, and the new inquiry for ferroalloys is quiet. One Youngstown consumer has bought 300 tons of 10 per cent ferrosilicon at the regular price of \$55 at furnace for first half of next year, and will shortly close for 1200 tons more. There have also been sales of 500 to 600 tons of ferromanganese for next year at the regular price of \$250, delivered, for 70 per cent.

We quote 70 per cent ferromanganese at \$250 delivered, 16 per cent spiegeleisen at \$75 at furnace and 50 per cent ferrosilicon for prompt shipment at \$160 and for delivery over the last half of the year, \$150 to \$155 at furnace, the furnaces usually absorbing the freight.

We quote 9 per cent Bessemer ferrosilicon at \$54; 10 per cent, \$55; 11 per cent, \$58.30; 12 per cent, \$61.60. We quote 6 per cent silvery iron, \$41; 7 per cent, \$43; 8 per cent, \$45.50; 9 per cent, \$47.50; 10 per cent, \$50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2.90 per gross ton, for delivery in the Pittsburgh district.

Plates.—The Standard Steel Car Co. and the Pressed Steel Car Co. are both operating their large plants 100 per cent on war work, and will continue to do so while the war lasts. The latter concern is turning out very large quantities of shells at both its plants, while the Standard Steel Car Co. is turning these out at Butler and also at New Castle, Pa. Both companies are heavy users of plates, and are also fabricating large quan-

tities of ship plates for Government shipyards. Mills are sold up on plates for Government for many months.

We quote sheared plates at 3.25c., at the mill, Pittsburgh, for third quarter.

Structural Material.—No commercial jobs of note were placed with local fabricators in the past week, and they all report that nearly 100 per cent of the jobs on their books is Government work which it will take some months to complete. The McClintic-Marshall Co. and the Fort Pitt Bridge Works are shipping large quantities of fabricated steel to France to be used in Government buildings in that country.

We quote beams and channels up to 15 in., at 3c. at mill, Pittsburgh, for third quarter.

Iron and Steel Bars.—Local makers of steel bars say present output is not running over 50 per cent of normal and is nearly all going to the Government for war essentials and to consumers making strictly war products. Shipments to the implement makers are fairly heavy. The demand for iron bars is reported better, and it is said some export orders have lately been taken by local mills. The demand for high-grade iron bars for making ship chain is very active. The supply of labor is short, and this is keeping down output.

We quote soft-steel bars rolled from billets at 2.90c.; from old steel rails, 3c.; and refined iron bars at 3.50c., at mill, Pittsburgh, for third quarter.

Wire Products.—Allocations have been made of the 22,000 tons of four-point black painted barb wire for France, making a total of 56,000 tons recently distributed to the mills. In a very short time, the Government will be in the market for upwards of 150,000 tons of barbed wire, of which 60,000 tons is for Italy, 65,000 tons for Great Britain, and this latter quantity may be increased to 90,000 tons. Shipment of this 125,000 to 150,000 tons of barbed wire is to be made in the first six months of next year. The wiremakers have suggested to the Government that there would be a larger output of barbed wire if it could supply about 50 per cent galvanized and 50 per cent black painted, for the reason that black painted barbed wire is very hard for the wire operators to handle, and they dislike it. It is probable this suggestion will be adopted, and in the near future. Government orders for barbed wire will be made up of 50 per cent galvanized and 50 per cent black painted. As deliveries on this large contract will not be started until early in January, there is some barbed wire capacity available for last quarter for commercial trade, but the quantity is not large. The manufacture of fence wire and wire fencing is down to 50 per cent or less, these products being regarded as largely non-essential. It seems likely that starting with the new year, the Government requirements of barbed wire will take practically the entire output, several manufacturers having expressed this opinion. Present output of wire and wire nails is not over 60 per cent and some large makers are running only to 35 or 40 per cent owing to the shortage of steel. The Pittsburgh Steel Co., Jones & Laughlin and American Steel & Wire Co. are getting ready to make shells, which will take a good part of their steel now being used in the wire mills. Prices on wire products to Sept. 30 are given on page 722.

Shafting.—Makers continue to report a fairly heavy demand for the larger sizes from 2¼ in. and up, on which they are sold ahead for two or three months, but the new demand for the smaller sizes is light. The automobile trade is not buying, but the implement trade is taking a fairly large quantity. Government orders are quiet.

For third quarter we quote cold-rolled shafting at 17 per cent off list in carloads and 12 per cent in less than carloads, f.o.b. Pittsburgh.

Cotton Ties.—Final figures show that the cotton crop this year is about 25 per cent less than the early figures indicated, and this means a corresponding decrease in the consumption of cotton ties. Rollings of cotton ties will likely continue until November, as several makers have not sold any for last quarter, waiting until the price was fixed. The price on cotton ties for September shipment is \$1.95 per bundle of

45 lb. f.o.b. Pittsburgh, and for October will probably be \$1.96, and for November \$1.97 per bundle.

We quote cotton ties for September shipment at \$1.85 per bundle of 45 lb., f.o.b. Pittsburgh.

Rivets.—It is expected that possibly this week the Government will place an order for 15,000 tons of rivets for the Emergency Fleet Corporation. This inquiry came out some little time ago, but was for only 10,000 tons, but late last week it was stated the quantity was 15,000 tons and would be allocated to the rivet-makers in a short time. Fully 95 per cent of present output is going to the Government on direct and indirect orders, but the commercial demand is quiet, there being very little new erection work going on aside from Government jobs.

We quote butthead structural rivets at \$4.40, conehead boiler rivets at \$4.50 per 100 lb. Small rivets are 50 and 10 per cent off list for third quarter, f.o.b. Pittsburgh.

Nuts and Bolts.—The Government is taking practically the entire output of nuts and bolts, although the commercial demand is heavy. Makers state they are turning down every day desirable inquiries from good customers on which they cannot quote. Large quantities of very heavy bolts are being used in the building of by-product coke ovens. One local concern is furnishing bolts as large as 2 in. diameter and 26 ft. long for this purpose. The nut and bolt makers have asked the institute committee to have restored the 85 reduction in prices of nuts and bolts made some time ago, and this question will come up for discussion before the price-fixing committee of the War Industries Board at Washington this week. Discounts in effect until Sept. 30 are given on page 722.

Hoops and Bands.—The demand for both hoops and bands has quieted down a good deal. For some time, demand for hoops for cooperage purposes has been active, especially for barrels to contain rosin, oil, turpentine and other products. The commercial demand is also quiet. We quote steel hoops and bands at 3.50c. per lb. base, f.o.b. Pittsburgh, to Sept. 30. For deep stamping or drawing quality, 25c. extra is charged and for extra deep stamping or drawing quality steel 50c. extra.

Spikes.—We note a heavy demand for small spikes and boat spikes, and on the latter makers say they are sold up for four or five months. The demand for standard spikes for railroad trackage is light and has been for some time.

Standard sizes of railroad spikes 9/16 x 4¼ in. and larger, \$3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, \$5.25 per 100 lb., rack bolts, \$4.90 base in lots of 200 kegs or more; less than 200 keg lots, \$1 per 100 lb. extra. All f.o.b. Pittsburgh.

Hot-Rolled Strip Steel.—This material is used very largely in the manufacture of war essentials, and the demand is very active, and heavier than the makers can supply as promptly as needed. Output is cut to 60 per cent or less owing to shortage in steel.

We quote hot-rolled strip steel at \$3.50 per 100 lb., Pittsburgh, for third quarter, 50c. additional being charged per 100 lb. for special stamping quality.

Cold-Rolled Strip Steel.—The commercial demand is quiet, and the Government has not been placing any considerable orders for some time. Output is not more than 50 per cent of normal capacity. We quote:

We quote cold-rolled strip steel at \$6.50 per 100 lb., f.o.b. Pittsburgh, terms 30 days, less 2 per cent for cash in 10 days when sold in quantities of 300 lb. or more. Freight is allowed to destination when it does not exceed 31c. per 100 lb.

Sheets.—In August the average rate of operation of the independent sheet mills was 60 per cent, and while they are allowed to operate to a maximum of 75 per cent, they are unable to get the steel to do so. Owing to the great scarcity of steel bars it is probable the average rate of operation in September will be less than last month. The shipments of sheets of all grades in August were about 180,000 tons, having been about 110 per cent of output. Stocks have been drawn from the extent of fully 20,000 tons. The Government is a heavy buyer of corrugated and galvanized sheets and is placing heavy orders right along. Many thousands of tons of black and galvanized sheets have been used in France for trench shelter, rolling kitchens and other

purposes, and as the forces move forward the demand for sheets for these purposes will grow larger and more urgent. In fact, much of the heavy Government demand lately for sheets was not expected and was due largely to the new positions taken at the front by the Allied armies while the Germans are retreating. Mills are sold up on all the sheets they possibly can turn out to January or later, and practically 95 per cent of the output is being sent to customers in class A, the lower ratings receiving a very small quantity of sheets. It is not expected there will be any change in prices for last quarter, but possibly there may be a slight advance in prices of galvanized sheets. Prices on sheets are given in detail on page 722.

Tin Plate.—Finally a plan has been perfected by which an ample supply of pig tin for this country and foreign countries making tin plate seems assured for next year. At a recent conference held in London at which three representatives from our Government were present it was decided to allot the output of pig tin in 1919 to the various countries in proportion to their output of tin plate. Under this allotment the United States is to receive next year 80,000 gross tons of pig tin, Great Britain 25,000 tons, Italy and France 5000 tons each, while smaller quantities may possibly go to two or three other countries. Under the terms of the agreement made all the pig tin shipped to the United States next year will be consigned to the American Iron and Steel Institute, and then distributed by the United States Steel Products Co. to the tin plate mills in sufficient quantities to meet their needs. Should any shortage in supply develop it will be borne by the countries named above, in proportion to their allotments. Owing to the economies effected by the war in the use of pig tin, it is believed the 80,000 tons allotted to this country next year will amply meet its needs. Prices of pig tin are to be controlled by a committee, not yet named, but there will be no desire on the part of this committee to take any advantage of this situation by forcing down prices. The object will be to pay the producers a fair price for their product. Nearly the entire output of tin plate now being made is being used for making perishable food containers, and there has been, by action of the Government, a further restriction in the use of tin plate for containing certain products. Last week the makers of cocoa and chocolate agreed that when their present stocks of tin plate are used up they will use some other product as containers, and this will result in a large saving of tin plate for the packing of foods. It is not expected there will be any change in price of tin plate for last quarter. Mills are still operating from 90 to 95 per cent, the average being near the lower figure. We quote tin plate made from Bessemer or open-hearth steel for shipment up to Sept. 30 at \$7.75 per base box, f.o.b. Pittsburgh. Price on tin plate given on page 722.

Wire Rods.—Recently the Government allocated 3800 tons of No. 5 rods for shipment to Great Britain, of which the American Steel & Wire Co. took 1800 tons, Jones & Loughlin Steel Co. 1000 tons, and the Pittsburgh Steel Co. 1000 tons. It develops that in a very short time the Government will want probably 35,000 tons of No. 5 soft steel rods for shipment abroad, and allocations for this large quantity are expected to be made in a short time. The commercial demand for wire rods from drawers is very active, but a very limited supply is available for them, and many concerns making products not classed as strictly war essentials have had their supply of rods cut off. Nothing is being done in foreign inquiries, as the rods can not be had. Prices on rods to Sept. 30 are given on page 722.

Wrought Pipe.—There has been some little reduction in output of iron and steel pipe, owing to the heavier demands of the government for shell steel, but the general average of operations among the iron and steel pipe mills is about 85 per cent. The Government is a fairly heavy buyer of pipe, much of it for shipment to France for laying water lines and other work, and mills are sold up for some months. The demand for oil country goods is very active, the Government encouraging the development of new fields to secure as large a production as possible. Jobbers' stocks are very low, and the

quantity of tubular goods the mills are able to ship to jobbers is very much less than needed. Discounts on iron and steel pipe to Sept. 30 are given on page 722.

Boiler Tubes.—Mills rolling iron and steel tubes report that so far their output has not been materially reduced because of the heavy demand of the Government for shell steel, nor do they believe it will be. Very heavy orders have been placed recently for boiler tubes for locomotives, and mills rolling iron and steel tubes are sold up for some months. Discounts to Sept. 30 are given on page 722.

Coke.—Blast furnace operators report that since it was decided to inflict a fine on any producer shipping inferior quality of coke, the quality has improved somewhat, but is not yet what it should be. Blast furnaces are so anxious to receive coke to keep running that very often they take in several cars that they know is below the standard of quality rather than reject them. There have been very few allocations of coke lately by the Fuel Administration and the distribution of coke to the blast furnaces is more satisfactory than for a long time. Very little free coke comes out, the entire output being shipped as fast as made, the supply of cars being good. The output of coke for the week ending Sept. 7 in the upper and lower Connellsville regions was 345,210 net tons, an increase over the previous week of 6,960 tons.

We quote 48-hr. blast-furnace coke at \$6; 72-hr. foundry, \$7, and crushed coke over $\frac{3}{4}$ in. at \$7.30, all in net tons of 2000 lb. at oven.

Old Material.—Early last week a meeting of the Sub-Committee on Scrap Iron and Steel was held in its offices in the Pennsylvania Building, Philadelphia, to discuss any matters that seemed desirable to bring up with the Price Fixing Committee of the War Industries Board at Washington, on Wednesday, Sept. 18. It is positively stated that no advances will be made in prices on any kind of scrap, but on the contrary it is possible that on a few lines slight reductions may be made, but this is not official. There is a sentiment existing that the scrap designated "unguaranteed low phosphorus" over which there was so much trouble recently, should be eliminated, and this classification may be stricken out. A good many contracts made in this material at \$34 per ton have lately been revised to read heavy steel scrap at \$29 per gross ton. The supply of scrap is reported fairly large, and several dealers report they are moving more material to customers than for some time. Shipments of borings and turnings to open-hearth plants are fairly heavy, and it is said some owners of open-hearth steel plants are trying to have the embargo on shipments of borings and turnings extended after Sept. 22, the date on which it expires. Some dealers are showing a good deal of energy in closing some contracts, and this is taken to mean that some prices may be reduced. Fairly large sales of heavy steel scrap, low phosphorus scrap and borings and turnings are being made right along at official prices, plus the $3\frac{1}{2}$ per cent commission to dealers. We quote:

Heavy steel melting scrap, Steubenville, Folsom, Brackenridge, Monessen, Midland and Pittsburgh, delivered.....	\$29.00
No. 1 cast scrap (for steel plants).....	29.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh.....	34.00
Hydraulic compressed steel scrap.....	29.00
Bundled sheet scrap, sides and ends, f.o.b. consumers' mills, Pittsburgh, district.....	\$27.50 to 29.00
Bundled sheet stamping scrap.....	22.00 to 23.00
No. 1 busheling scrap.....	28.00 to 29.00
Railroad grate bars.....	18.00 to 19.00
Low phosphorus melting stock (unguaranteed).....	34.00
Low phosphorus melting stock (guaranteed).....	36.50
Low phosphorus melting stock (bloom and billet ends, heavy plates).....	39.00
Iron car axles.....	46.00 to 46.50
Locomotive axles, steel.....	46.00 to 46.50
Steel car axles.....	46.00 to 46.50
Railroad malleable (for malleable works).....	34.00
Machine shop turnings.....	19.00
Cast iron wheels.....	29.00
Rolled steel wheels.....	36.00
Sheet bar crop ends (at origin).....	35.00
Cast iron borings.....	19.00
No. 1 railroad wrought scrap.....	34.00
Heavy steel axle turnings.....	24.00
Heavy breakable cast scrap.....	23.00 to 29.00

Chicago

CHICAGO, Sept. 16—(By Wire).

Sales managers have been officially notified of the concessions in price allowed to the makers of agricultural implements by Government direction. That the concession was being agitated was stated in THE IRON AGE of Aug. 8th and that it was granted was stated in the issue of Aug. 15. The official notice states that the concessions comprise \$5 per ton from the Pittsburgh base on bars, making the price to the implement makers 2.65c per lb. against 2.90c which others pay. They are to have a discount of 25 per cent off the list for shafting, discs are to cost them 7½c. per lb. Pittsburgh base. The new prices are to apply as from July 15, contracts made prior to that date to be filled at the old prices. The new quotations will apply to the season July 31, 1918, to June 30, 1919. The manufacturers entitled to the concessions are listed by name and comprise makers of plowing, seeding, cultivating, harvesting, gathering and threshing machinery currently used in farm work, including farm wagons and buggies. Similar machinery not regularly used in farm work, such as lawn mowers, etc., is not included. The mills are doing their best in the way of production and that is extremely well, but they could do better if they were to receive a better grade of coal. Due to this cause, the output of the leading producer is probably 2000 tons per day less than what it might be. The absorption of unfinished steel by forging billets and by the rail, plate and bar mills leaves finishing departments in a bad state, particularly sheet and wire mills, and they cannot begin to satisfy the demand which comes to them.

The leading independent to-day received notice that in October and November it must ship 22,000 tons of shell bars direct to France and this is but a sample of the allocations in that material.

Pig iron men point out that the steady stream of allocations of iron is likely to interfere with contract deliveries to large consumers who are doing essential work while some of the smaller furnaces are being swamped with orders they must accept.

Ferroalloys.—For small lots of ferromanganese spiegeleisen and ferrosilicon there is a lively demand and sales of larger lots of ferromanganese are being made for first-half delivery. A car wheel maker wants 500 to 1000 tons of spiegeleisen. The makers of 50 per cent ferrosilicon are expected to open their books for the first half in the course of two or three weeks and considerable inquiry is accumulating in anticipation. It is understood that a round lot of 30 to 40 per cent ferromanganese has been placed.

We quote 70 per cent ferromanganese at \$250, delivered; 50 per cent ferrosilicon at \$150 to \$160, delivered, and 16 to 18 per cent spiegeleisen at \$75, furnace.

Pig Iron.—Allocations of pig iron continue to be made and their aggregate begins to assume proportions which will create a problem for the furnaces. There is a likelihood that small furnaces may be swamped with the quantity of iron allocated to them while the large producers are becoming fearful that they will be unable to supply to the large consumers all the iron which the latter have under contract. The outlook is particularly dubious for first-half contracts. Where satisfactory assurances of the essential nature of the need is given first-half contracts are still being entered, though to a lesser extent than formerly. It is natural for the furnaces to want to care for their big customers, all of whom are on important Government work. Many of the current allocations call for the delivery of iron to small and almost unknown melters. The Red River Furnace Co. has sold some silvery for delivery in 30 days. As a rule, sellers are doing very little in the selling line. They are still concerned with getting the statistics demanded by the Government as to stocks in consumers' hands, quantities under contract, etc. The figures are supposed to be sent to the Government by the tenth of every month, beginning September, but some consumers have been very dilatory in sending the data to the producers, who in turn must give the facts

to the Government each month, and it is pointed out that some of these consumers may find themselves without iron unless they act more promptly. The leading Southern producer of merchant iron is offering nothing at all in this territory and the others only occasional off lots.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable, steel-making irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5.....	\$38.90
Lake Superior charcoal, No. 6 and Scotch	\$39.50 to 41.00
Northern coke foundry, No. 1.....	33.50
Northern coke foundry, No. 2.....	33.00
Northern coke foundry, No. 3.....	32.50
Northern high-phosphorus foundry.....	33.00
Southern coke No. 1 foundry and No. 1 soft.....	33.50
Southern coke, No. 2 foundry.....	33.00
Malleable	33.50
Basic	32.00
Low phosphorus (copper free).....	53.00
Silvery, 7 per cent.....	46.20

Plates.—Unless a consumer has an A-3 or better priority rating, he has no chance of getting plates. Urgent needs of the Government are taking all.

The official mill quotation is 3.25c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

Structural Material.—The material for the 20,000 French cars recently ordered has not been placed. This material will serve to push further off material for American freight cars inasmuch as the French cars have an A-3 rating and the domestic cars one of B-2. No more cars have been placed either for domestic or foreign use. Now that state councils of defense must pass on the urgency of structural jobs, it is conceded that the Rush Street bridge, Chicago, requiring 8000 tons, will not be built in war time. The American Bridge Co. will fabricate 304 tons comprising a riveted truss span and two plate girder bridges for the Wabash Railroad (U. S. Railroad Administration).

The official mill quotation is 3c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

Sheets.—Lack of sheet bars to a degree that keeps production under 50 per cent is the story in sheets. The jobbers want them, but a B-4 priority will not bring delivery inside of six months and probably not within that time inasmuch as orders with higher ratings are steadily being received. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 722. Jobbers quote:

Chicago delivery out of stock regardless of quantity, No. 10 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

Bars.—As noted at the beginning of this report, the trade has received official notification of the concessions granted to the makers of agricultural implements amounting to \$5 per ton in the case of steel bars. While those in close touch with the implement makers say the latter needed some relief, many persons interested insist that they cannot see the equity of the arrangement in view of their belief that the farmer is well able to pay more than he does for his machinery. The call for shell steel is constant and heavy, an independent mill receiving notice to-day of an allocation requiring it to roll 22,000 tons for direct shipment to France, half in October and half in November. Bar iron continues active. Until Oct. 1 bar iron can be exported on the authority of a shipping license, but after that date priority rulings apply as with steel. Steel rails are scarcer than ever and the supply of discard shell steel is more difficult to obtain. Where this steel was obtained for \$41 and \$42 per ton, \$52 and \$53 are now asked. On rivet and bolt rounds the mills are filled to capacity. Railroads in the Chicago and Northwest territory have been notified that limited quantities of bar iron are obtainable from the rolling mill of the Santa Fe Railroad at Chicago and from the Great Northern Railroad. Attention to the surplus held by the latter road is directed by the Northwestern Regional Purchasing Committee, the lines

asked to exhaust these supplies before buying there.

all prices are: Mild steel bars, 2.90c., Pittsburgh, taking rate to Chicago of 27c. per 100 lb., and discard steel 2.25c. Chicago. Bar iron is quoted at 3.50c., Chicago, 2.25c. Chicago, a leading maker having mill carbon at 3c. Chicago as the basing point. Jobbers quote: Soft steel bars, 4.17c.; bar iron, 4.17c.; rebar bars, 4.17c. base. No extra charge for twisting and over, 2 1/2c. for twisting 5/16, 11/16, 1/2 and 9/16; 5c. 1/8 and 3/4; 10c. for 5/16 and 15c. per 1/4-in. Extras are charged for small sizes. Shafting, list plus 10 per cent.

Rails and Track Supplies.—Fairly a year behind on orders, the local maker of rails is committing itself to further obligations. It rolls and ships as directed by the United States Railroad Administration. We

standard railroad spikes, 3.90c., Pittsburgh. Track bolts, square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3.25c.; iron, 3.75c.; f.o.b. maker's mill. The base for light sections taking Government extras.

Cast-Iron Pipe.—Belfield, N. D. will open bids Sept. 250 tons. The Bates & Rogers Construction Co. requiring for 750 tons for an air nitrate plant at Ohio.

quote per net ton, f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$64.80; 6-in. and larger, \$61.80. A and gas pipe, \$1 extra.

Scrap Material.—It is understood from official sources no change is contemplated for the fourth quarter in fixed maximums for scrap. It is possible that a maximum may be fixed for country mixed scrap, an heretofore not regulated. Doing this would re any advantage to be gained by holding mixed and possibly cause more to come out. The general tion is one of big demand and inadequate supply, apparently not being enough scrap in existence. Demand is general, shipments are wanted quickly, the large dealers are endeavoring to distribute. Melters are taking off grades which require rehandling. An Eastern mill has stated it would 20,000 tons of Western material, if offered, but Western mills are being protected. The Union and Monon route have issued small lists.

quote for delivery in buyers' yards, Chicago and vicinity freight and transfer charges paid, as follows:

Old iron rails.....	\$39.00
Delaying rails.....	\$55.00 to 60.00
Old car wheels.....	29.00
Old steel rails, rerolling.....	34.00
Old steel rails, less than 5 ft.....	34.00
Heavy melting steel.....	29.00
Brass switches and guards, cut apart.....	29.00
Smelting steel.....	29.00
Heavy steel axle turnings.....	24.00

Per Net Ton

Iron angles and splice bars.....	\$34.82
Iron arch bars and transoms.....	41.52
Steel angle bars.....	30.36
Iron car axles.....	41.52
Steel car axles.....	41.52
No. 1 railroad wrought.....	\$29.75 to 30.36
No. 2 railroad wrought.....	28.75 to 29.46
Hot forge.....	28.75 to 29.46
Pipes and flues.....	24.50 to 25.00
No. 1 busheling.....	27.00 to 27.63
No. 2 busheling.....	18.50 to 19.00
Steel knuckles and couplers.....	30.36
Old springs.....	30.36
No. 1 cast scrap.....	30.00 to 30.36
Roller punchings.....	32.59
Locomotive tires, smooth.....	40.50 to 41.50
Machine-shop turnings.....	15.75 to 16.25
Lathe borings.....	16.50 to 16.96
Drive plate and light cast scrap.....	25.50 to 25.89
Gate bars.....	25.50 to 25.89
Brake shoes.....	25.50
Railroad malleable.....	30.36
Agricultural malleable.....	29.00 to 30.00
Country mixed scrap.....	22.50 to 23.00

Wire Products.—Production is somewhat less and is concentration on barbed wire for military use to extent that causes wonderment as to what is with it all. Every inquiry is closely scrutinized given any action. For prices see finished iron steel f.o.b. Pittsburgh, page 722.

Bars and Nuts.—To insure delivery affidavits as to essential character of the need must now be given with orders and specifications against unfilled con-

tracts, the makers being forced to this course in order to obtain raw material. If they make lower prices for the implement makers, their heaviest customers, they will ask for lower prices on their raw material. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 722. Jobbers quote:

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to 3/4 x 4 in., 37 1/2 per cent off; larger sizes 25 and 5 off; carriage bolts up to 3/4 x 6 in., 32 1/2 off; larger sizes, 20 off; box pressed nuts, square, tapped, \$1.05 off; hexagon tapped, 85c. per 100 lb.; coach or lag screws, gimlet points, square heads, 40 per cent off.

Philadelphia

PHILADELPHIA, Sept. 17.

Interest centers in the conference on prices for fourth quarter to be held in Washington Thursday between the general committee of the American Iron and Steel Institute and the Price Fixing Committee of the War Industries Board. At a preliminary conference in New York on Monday, various groups pressed their claims for higher prices. Some of the pig iron interests supported their claims by statements showing that they are producing iron at a loss. If advances are authorized, they will probably affect only those regions in which conditions tend toward extreme operating costs.

Pig Iron.—At a meeting of pig iron producers in New York last week and at another conference with the steel committee, on Monday, producers of pig iron make strong contentions for an advance on pig iron, particularly foundry grades, for fourth quarter. Last week's meeting, which was called by the Associated Manufacturers of Merchant Pig Iron, heard from representatives of all districts. Alabama, Tennessee, Virginia and eastern Pennsylvania furnace operators all made claims for higher prices, based on increased costs of operation. It was stated that of a total annual production of foundry iron approximating 8,000,000 tons, at least one-eighth is now being made at an actual loss, and it was claimed that producers whose costs exceed selling prices cannot continue to operate under such conditions. Judge E. H. Gary, chairman of the general committee of the American Iron and Steel Institute, is said to have agreed to press the claims for higher iron prices at Washington, and suggested that the matter be left with the general committee. The pig iron makers, however, asked permission to appoint their own spokesmen, and it was finally agreed, it is understood, that two pig iron men should accompany the general committee to the Washington conference. There was a strong feeling among the merchant iron producers that they should have their own permanent committee to discuss prices with Government officials. It is considered likely that prices may be advanced in certain districts where operating costs are unusually high. This action would follow the regional plan as applied to coal and coke. Inquiry for first half continues active, but few sales are being made. Opinion in the trade is that the American Bridge Co. and American Steel & Wire Co., which want 14,000 tons of basic iron a month for first quarter for Eastern plants, will have to obtain this by allocation. Orders for nearby delivery from the Oxford furnace, which is out for relining, have been allocated to other furnaces. We quote standard grades of iron f.o.b. furnace, excepting Virginia iron, for which delivered prices are quoted:

Eastern Pennsylvania No. 1 X.....	\$34.00
Eastern Pennsylvania No. 2 X.....	33.50
Eastern Pennsylvania No. 2 foundry.....	32.00
Virginia No. 2 X (including freight).....	37.60
Virginia No. 2 foundry (including freight).....	37.10
Basic.....	32.00
Gray forge.....	32.00
Bessemer.....	35.20
Standard low phosphorus.....	53.00
Low phosphorus (copper bearings).....	50.00

Ferroalloys.—The demand for ferromanganese and spiegeleisen is inactive. Prices continue at \$250 for 70 per cent ferromanganese, delivered, with \$3.50, instead of \$4, now being generally charged for each extra unit, or there is a deduction of \$3.50 a unit if the alloy analyzes less than 70 per cent. Spiegeleisen is still

quoted at \$75 per ton f.o.b. furnace, with \$3.50 per unit addition or deduction if above or below the 16 to 18 per cent standard. The Alien Property Custodian last week sold at public auction three lots of ferro-vanadium made by the Primos Chemical Co. The alloy brought \$4.60 and \$4.65 per lb. of contained vanadium. The three lots brought a total of \$175,000.

Billets—The market is without incident. We quote 4 x 4 in. open-hearth rerolling billets at \$51.30, Philadelphia.

Plates—Orders have been allocated for several thousand tons of plates for the Baldwin Locomotive Works, Philadelphia, this tonnage being for 200 additional standardized locomotives for shipment to France and 50 locomotives for the Egyptian State Railways. The latter order has been given priority over all other locomotive work, the steel being given A-3 classification. We quote plates at 3.48c., Philadelphia.

Structural Material—No building projects are reported here. Eastern mills are rolling largely for the shipbuilding program. We quote plain material at 3.23c., Philadelphia.

Iron and Steel Bars—Iron rolling mills will now receive more liberal supplies of borings and turnings through permits which are being issued granting them the right to pay up to \$21 a gross ton for this grade of scrap, a \$2 advance over the maximum which steel works and blast furnaces may pay. We quote soft steel bars at 3.13c., and bar iron at 3.73c., Philadelphia.

Old Material—As the result of action by the Subcommittee on Scrap Iron and Steel, American Iron and Steel Institute, permits have been granted to a number of iron rolling mills to pay up to \$21 a gross ton for clean turnings and borings suitable for rolling mill use, this being \$2 above the maximum price which steel works and blast furnaces may pay for the same grade of material. The embargo on shipments of borings and turnings to blast furnaces, which was recently put into effect, has not resulted as successfully as was expected in diverting borings and turnings to rolling mills, but instead has increased the shipments of such material to steel works. Rolling mills may pay the \$21 only when a specific permit has been issued, and such permits are given by the sub-committee only after careful investigation. A permit may be canceled whenever the mill has received a sufficient supply of scrap. The adoption of this ruling by the sub-committee was followed by a small boom in borings and turnings in this market and there were sales of several thousand tons within a few days. It should be understood that this ruling does not authorize a change in official prices; hence we continue to quote borings and turnings for all purposes at the official maximum, \$19. We quote for delivery in eastern Pennsylvania as follows:

No. 1 heavy melting steel.....	\$29.00
Steel rails, rerolling.....	34.00
No. 1 low phosphorus heavy, 0.04 and under..	39.00
Low phosphorus, 0.04 and under.....	36.50
Low phosphorus, 0.06 and under.....	\$32.00 to 34.00
Old iron rails.....	39.00
Old carwheels.....	29.00
No. 1 railroad wrought.....	34.00
No. 1 yard wrought.....	33.00
Country yard wrought.....	29.00
No. 1 forge fire.....	\$28.00 to 29.00
Bundled skeleton.....	28.00 to 29.00
No. 1 busheling.....	31.00
No. 2 busheling.....	19.00 to 20.00
Turnings (for blast furnace use).....	19.00
Machine-shop turnings (for rolling mill use).....	19.00
Cast borings (for blast furnace use).....	19.00
Cast borings (clean).....	19.00
No. 1 cast (for steel plant use).....	29.00
No. 1 cast (cupola sizes).....	34.00
Grate bars.....	28.00 to 29.00
Stove plate.....	28.00 to 29.00
Railroad malleable (for steel plants).....	29.00
Railroad malleable (for malleable works)....	34.00
Wrought iron and soft steel pipes and tubes (new specifications).....	33.00
Ungraded pipe.....	29.00

Sheets—Makers of sheets are receiving large Government orders, particularly for the heavier gages. It will be determined on Wednesday at Washington whether an advance in price on galvanized sheets is to be granted. We quote No. 10 blue annealed sheets

at 4.48c., No. 28 black sheets at 5.25c., and No. 30 galvanized at 6.48c., all Philadelphia.

Rails—A western Pennsylvania mill will roll 10,000 tons of 25-lb. rails and 12,000 tons of 19-lb. rails for the American Expeditionary Forces. No action has been taken by the City of Philadelphia on its recent inquiry for 4200 tons of rails and several hundred tons of track material for an elevated railroad, unusual complications having arisen. Only one steel company has submitted a proposal and the State law provides that there must be competitive bidding. The rails were wanted for delivery in 1919 and obviously no company desires to make a price now for delivery next year and State law forbids the purchase of material at an unknown price. In view of the fact that the Government will probably fix rail prices, the city may ask for legal authority to place an order for the rails at the Government price existing at time of shipment. This may call for special legislation.

Eastern railroads under Federal control, and certain Federal controlled railroads in Trunk Line and Central Freight Association territory have been granted permission by the Interstate Commerce Commission to file increased local and joint rates for manufacture of iron articles, billets and pig iron from Pittsburgh and other Pennsylvania points and from Cleveland, Cincinnati, Chicago and other Central Freight Association territory points to Boston, New York, Philadelphia, Norfolk and other points taking those rates.

Buffalo

BUFFALO, Sept. 16

Pig Iron—The situation is the same as a week ago as regards the constant augmentation of Government orders, so that practically all the furnaces in the district are on the basis of shipping 100 per cent product for Government purposes. Allocations this week were mostly in 500 and 1000-ton lots. The supply shows betterment this week and furnaces are making all possible efforts to speed up shipments and get their books cleared up before the setting in of winter business. In view of the probability of Government allocation covering capacity production into 1919, producers are of the opinion that formal contracting into next year will serve no useful purpose and as a rule are not entering such business. Of interest, however, has accepted a small amount of 1919 business for foundry iron from a few old customers who feel better satisfied to have orders on the books although realizing that shipments on such orders are likely to be superseded for a long period by Government priorities. The stack of a local interest which has been operating on ferromanganese for some time past has now been switched to malleable. We quote the Government price schedule, f.o.b. furnace Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$34.50
No. 2 X, 2.25 to 2.75 silicon.....	33.50
No. 3 foundry, 1.75 to 2.25 silicon.....	32.50
Gray forge.....	32.00
Malleable.....	32.50
Basic.....	32.00
Lake Superior charcoal, regular grades, f.o.b. Buffalo.....	32.50

Finished Iron and Steel—The ratio of Government demand is increasing and the priorities of the A class and the high B priorities are absorbing practically the entire output of the mills. It is understood that some of the largest mills are declining to entertain orders even for class C business and state that they are able to give very little, if any assurance of shipment against priorities of a Class B-4 character. Jobbing stocks are becoming depleted and it is evident that steps will have to be taken to replenish the stocks in jobbers' warehouses if the urgent war demands are to be met. It is understood that the War Industries Board has definitely ruled that the automatic priorities contained in circular No. 4 are not to apply on shipments into Canada. It is therefore necessary for Canadian users to either negotiate a priority through

aid of the Canadian War Mission and the War Industries Board, or have the American mills make application to the Director of Steel Supplies for a permit to ship, and as "permit" shipments go in D class, it is evident there will be little steel that can be made under the permit system. One local producer is increasing its billet, plate and bar mill capacity and is now making large shipments of billets for shells on government orders which it holds; it is also receiving additional allocations for ship plates.

Old Material.—Active demand in all lines continues, but there is a marked scarcity of materials to meet it. Stocks are low and dealers are unable to gather sufficient quantities to equal the tonnages called for; scarcity of labor still being the principal hindrance to accumulation and classification of materials. The market is being combed by Eastern brokers for turnings and borings for rolling mill consumption, the inquiry being extraordinarily large, with apparently only comparatively small tonnages available. Offers of \$1.00 per ton are being made for these commodities, \$2.00 over the regular price of \$19.00. It is understood that action was taken by the sub-committee of the American Iron and Steel Institute at its meeting last week increasing the price on these lines and the trade is awaiting official advices. Open-hearth consumers of the district state official notification of the change has not been received. With this exception the price schedule remains as heretofore, per gross ton, Buffalo, as follows:

Heavy melting steel.....	\$29.00
No. 1 low phosphorus, heavy, 0.04 and under.....	39.00
Low phosphorus, 0.04 and under.....	36.50
Low phosphorus, not guaranteed.....	34.00
No. 1 railroad wrought.....	34.00
No. 1 railroad and machinery cast.....	34.00
Iron axles.....	\$44.00 to 46.00
Steel axles.....	44.00 to 46.00
Car wheels.....	29.00
Railroad malleable.....	34.00
Machine shop turnings.....	17.00 to 17.50
Heavy axle turnings.....	24.00
Clean cast borings.....	18.00 to 19.00
Iron rails.....	36.00 to 37.00
Locomotive grate bars.....	27.50 to 28.00
Stove plate.....	27.50 to 28.00
Wrought pipe.....	27.00 to 28.00
No. 1 busheling scrap.....	29.00 to 30.00
No. 2 busheling scrap.....	21.00 to 23.00
Bundled sheet stamping scrap.....	21.00 to 23.00

Birmingham

BIRMINGHAM, ALA., Sept. 16.

Pig Iron.—Foundry allocations continue to be placed in the Birmingham district at the rate of from 5000 to 10000 tons per week. Some of the specifications, especially for basic, are not such as are easily arrived at by northern makers, and there has developed a hesitancy to accept a portion of the orders, but it is believed that practice will perhaps overcome some of these objections. The Sloss-Sheffield and Alabama companies each have a stack on basic and the Woodward Iron Co. has three stacks on basic in addition to the Tennessee and Gulf States companies, the Tennessee being for the greater part on basic and the Gulf States on basic for its own requirements entirely. The foundry make is much reduced. All stocks on yards do not now embrace over 100,000 tons. One day recently one furnace interest had but 750 tons on yards, another 7500, and so on. The inquiry for 1919 is insistent. The largest foundry producer said: "We are not accepting any orders for 1919." A large iron broker said: "While we are tentatively booked for 1919, we do not regard these bookings as real contracts because we do not guarantee delivery." Still another interest said: "We are making no bookings at all for 1919 on account of allocations." An experienced and well-informed furnace operator said: "We have succeeded fairly well in getting regular customers with the exception of delivery in deliveries owing to the preference of allocated metal." Furnace practice has undoubtedly improved as shown in the August report of iron production, which was 221,997 tons compared with an average of 202,000 during the preceding two months and was only 10,000 tons under the production of August in 1917, the record-maker for that month. The average under-production

this year has been 30,000 tons per month. Low-grade metal is absorbed as fast as made and utilized wherever possible. We quote, per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry and soft.....	\$33.00
Basic.....	32.00

Cast Iron Pipe.—With water pipe for cantonments, flange pipe for Southwestern oil fields and a variety of castings, the pipe shops are keeping fairly busy, much more so than they expected to be at this time. One pipe works machine shop is making lathes. There continues to be a dearth of orders from municipalities.

Old Material.—Outside of a decided demand for cast and wrought scrap, the old material market has been rather quiet. Some hope for higher prices when they are next revised, but for the time being they continue to be the maximum which Southern consumers offer with their advantage of freight rates. Stocks are fair. There is a variation in prices obtained in sorted and unsorted cast scrap. We quote, per gross ton, Birmingham district delivered prices, as follows:

Old steel axles.....	\$35.00 to \$40.00
Old steel rails.....	28.00 to 30.00
Heavy melting steel.....	27.00 to 27.50
No. 1 railroad wrought.....	30.00 to 31.00
No. 1 cast.....	29.00 to 30.00
Old car wheels.....	29.00 to 30.00
Tramcar wheels.....	28.00 to 29.00
Machine shop turnings.....	16.00 to 17.00
Cast-iron borings.....	17.00 to 18.00
Stove plate.....	25.00 to 26.00

Small consumers in the Birmingham district and adjacent territory are paying maximum Government prices for cast scrap, viz., \$29 in unbroken lots and as high as \$24.00 in cupola sizes of 150 lb. maximum, delivered.

Coal and Coke.—The coal production has suffered from a period of car shortage at several mines, but this has disappeared and an increase over the low output of the past two weeks of 390,000 and 392,000 tons respectively is anticipated. Recovery to the high record of 433,000 tons is rather expected.

St. Louis

ST. LOUIS, Sept. 16.

Pig Iron.—The pig iron market continues without feature, necessarily, in the conditions existing and the only transactions appearing are those resulting from the offering of small lots of excess production or of off analysis metal. Sales for 1919 delivery, while occasionally made, are under Government permission to the furnace to contract to essential industries and therefore have very little feature, as the large industries operate under priority orders, being chiefly on war work. Foundries are increasing in their attention to war work, though there are some users of pig iron who are prevented from getting material by the non-essentiality of their present output and their lack of government work. Notable among these are the stove foundries which are so limited in their domestic output as to be on the verge of shutting down unless there is an improvement in the situation.

Coke.—The coke conditions have not been materially affected here, so far as metallurgical transactions are concerned, by the recent reduction ordered in the price. The shipments are under priority regulation to industries and therefore are proceeding in accordance with Government needs.

Finished Iron and Steel.—Finished products show no change in the business being done and in consequence there are no new features to the market. Movement from the mills is limited to war uses, of course, and stock is moving out of warehouse under the rigid regulations previously established. We quote for stock out of warehouse as follows: Soft steel bars, 4.24c.; iron bars, 4.24c.; structural material, 4.34c.; tank plates, 4.59c.; No. 8 sheets, 5.54c.; No. 10 blue annealed sheets, 5.59c.; No. 28 black sheets, cold rolled, one pass, 6.59c.; No. 28 galvanized sheets, black sheet gage, 7.84c.

Old Material.—In scrap the sharp demand, due to pressing needs, has created a readjustment of prices practically all along the line and this has been further

accentuated by the fact that the railroads are not now being permitted to offer cast scrap of any grade or class, this being also true of car wheels, grate bars, arch bars, etc., while very few axles are being put out for general buying. Practically all business is now being done on the commission basis permitted by the Government and the dealers are, therefore, limited in their individual transactions to acting for the most part as the representatives of customers in obtaining material which is needed. All consumers are in sharp need of material of all classes and grades and there is nothing offered at the present time which does not find a ready sale. In fact, the buyers are now in the position of having to search for scrap instead of having it offered them. Lists out from the railroads include 500 tons from the Mobile and Ohio, 1500 from the Missouri, Kansas and Texas and 800 tons from the Union Pacific. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails.....	\$38.50 to \$39.00
Old steel rails, rerolling.....	33.50 to 34.00
Old steel rails, less than 3 ft.....	31.00 to 31.50
Relaying rails, standard sections, subject to inspection.....	55.00 to 65.00
Old carwheels.....	28.50 to 29.00
No. 1 railroad heavy melting steel scrap.....	23.50 to 29.00
Heavy shoveling steel.....	28.00 to 28.50
Ordinary shoveling steel.....	27.00 to 27.50
Frogs, switches and guards, cut apart.....	28.50 to 29.00
Ordinary bundled sheet scrap.....	24.75 to 25.25
Heavy axle and tire turnings.....	21.50 to 22.00
Per Net Ton	
Iron angle bars.....	\$33.00 to \$33.50
Steel angle bars.....	29.50 to 30.00
Iron car axles.....	41.00 to 41.50
Steel car axles.....	41.00 to 41.50
Wrought arch bars and transoms.....	40.00 to 40.50
No. 1 railroad wrought.....	29.75 to 30.25
No. 2 railroad wrought.....	29.00 to 29.50
Railroad springs.....	29.75 to 30.25
Steel couplers and knuckles.....	29.75 to 30.25
Locomotive tires, 42 in. and over, smooth inside.....	33.50 to 39.00
No. 1 dealers' forge.....	26.00 to 26.50
Cast-iron borings.....	16.50 to 17.00
No. 1 busheling.....	27.00 to 27.50
No. 1 boilers cut to sheets and rings.....	24.00 to 24.50
No. 1 cast scrap.....	29.50 to 30.25
Stove plate and light cast scrap.....	23.00 to 23.50
Railroad malleable.....	28.75 to 29.25
Agricultural malleable.....	26.75 to 27.50
Pipes and flues.....	25.25 to 25.75
Heavy railroad sheet and tank scrap.....	24.00 to 24.50
Railroad grate bars.....	21.50 to 22.00
Machine shop trimmings.....	16.50 to 17.00
Country mixed scrap.....	21.50 to 22.00
Uncut railroad mixed scrap.....	24.00 to 24.50

New York

NEW YORK, Sept. 17.

Pig Iron.—Discussion as to the probable action to be taken at Washington in regard to prices of pig iron overshadows everything else in the market. At the recent meeting of the Pig Iron Manufacturers' Association, some furnaces in Tennessee showed costs amounting to \$40 per ton, while some eastern Pennsylvania furnaces assert that their costs amounted to \$38 per ton. These stacks are considered exceptional and as not likely to be used as standards in fixing the schedule. While a strong sentiment was developed in favor of having a committee of merchant pig iron manufacturers represent these manufacturers at Washington rather than a committee of steel manufacturers, there was no disposition to discredit the motives of the latter and good feeling prevailed throughout the meeting. It is pointed out that naturally the steel manufacturers do not have the same viewpoint as the merchant iron manufacturers and may not fully appreciate their problems. It is intimated in some quarters that possibly officials at Washington may take the position that it will be well for some of the high-cost furnaces to blow out, so that the coke can be used to better advantage in other stacks. Many reports from melters as to stocks on hand indicate that they have enough tonnage to meet their requirements for a month, while a few have two or three months' supply. On the whole, the

condition of stocks is considered satisfactory. Although there is still inquiry for iron for first half of next month, a seller who recently offered to sell a moderate tonnage found that it was not taken with the eagerness which might have been expected. We quote prices as follows for tidewater delivery for Northern and Southern grades:

No. 1 X.....	\$38.50
No. 2 X.....	34.00
No. 2 plain.....	34.00
No. 2 X Virginia.....	32.00
No. 1 Southern (all rail).....	37.00
No. 2 Southern (all rail).....	32.00

Ferroalloys.—Unusual quietness pervades the manganese market, and there is no inquiry of account reported. The two fairly large amounts in the market the last two weeks are understood to have been satisfied, but details are lacking. In one case it appears that a single producer took the whole of the ferromanganese portion having been taken in a slight recession from the prevailing quotation in order to secure the larger quantity of spiegeleisen. The quotation continues at \$250, delivered, for 70 per cent alloy, with \$3.50 per unit added or subtracted for variation from this standard. Aside from the sale of spiegeleisen referred to above, the market is quiet. \$75, furnace, for 16 to 18 per cent alloy and at \$80 for 18 to 20 per cent alloy. There are two new inquiries, one for 500 tons for delivery in the next six months and one for 100 tons for prompt delivery. Ferroalloy 50 per cent, is quiet at about \$155, delivered, for contract when several hundred tons are involved and about \$160 to \$165 for prompt and early delivery.

Finished Iron and Steel.—Although the record of the Bridge Builders and Structural Society, noted elsewhere, show that 57 per cent of the capacity of bridge and structural shops of the country was under contract in August, few large size jobs have been noted in the period and not much large work is in prospect. The project to connect Lake Pontchartrain with the Mississippi River is in an uncertain state at the present time, the bids on the bascule bridges and lock having been rejected on the basis of their being informal, probably because they provided for protection against the uncertainties of the future. The bids do not partook of the nature of percentage proposals, cause the development would run over two or three years. The Pennsylvania Railroad has closed contracts of bridge work, crane runways, ash-handling pier reinforcement, etc., and the American Bridge Co. will supply 200 tons for the Central Railroad of New Jersey. The largest single award covers the Government repair shops at San Antonio, 1600 tons, provided by the Kansas City Structural Co., which is also providing 550 tons for an acid plant for the Pratt & Whitney Engineering Machine Co., Atlanta. The Hay Foundry Iron Works has been awarded 450 tons for 10 major buildings at Lake Denmark, N. J. For a hangar at Philadelphia taking 600 tons, George F. Pawling & Co., Philadelphia, is the general contractor, and for an oil plant at Yorktown, Va., requiring a small tonnage of steel, the F. W. Mark Construction Co. has the contract. A battery storage building at the Los Angeles Navy Yard, which of steel would take 250 tons, is to be built of concrete. An allocation has been made of 19.2-lb. rails for France to be rolled and discarded by one company's share at least is 11,500 tons, together with 300 tons of splice bars and 375 tons of bolts and nuts. We quote mill shipments as follows: Steel 3.145c.; shapes, 3.245c.; plates, 3.495c.; and bars, 3.745c., all New York. Out-of-store prices are 1c. higher.

Cast Iron Pipe.—Cast-iron pipe manufacturers are watching with keen interest the developments in regard to pig iron, for it seems certain that if prices of iron should be advanced, quotations on cast-iron pipe would be moved up accordingly. Government prices, including freight, are based on \$62.70, delivered, New York, but the prices usually quoted are as follows: \$61.75, New York, for 6-in. and heavier; \$64.75 for 4-in.; \$71.75 for 3-in., with \$1 additional for class A gas pipe.

Old Material.—Although no official announcement has been made as to price changes, scrap dealers

been given permission by the Sub-Committee on Scrap Iron and Steel to sell clean borings or clean turnings at \$21 to plants having a freight rate of \$3.10, making the New York price \$17.90. This was done for the reason that important plants working on Government business were unable to obtain borings and turnings because this kind of old material was being sold to blast furnaces at \$19, delivered, and furnaces were willing to take material which would not be suitable for use for rolling mill plants. The edict forbidding shipments to blast furnaces expires Sept. 22 and it is understood there has been considerable tonnage collected for this use. Demand continues active and car supply is satisfactory. We quote buying prices of dealers and brokers, per gross ton, New York, as follows:

Heavy melting steel.....	\$26.20
Rerolling rails.....	30.80
Relaying rails.....	\$60.00 to 70.00
Iron and steel car axles.....	43.70
No. 1 railroad wrought.....	30.80
No. 1 railroad wrought, cut to not less than 10 in. or over 24 in.....	35.80
Wrought-iron track scrap.....	28.80
Forge fire.....	25.00 to 25.50
No. 1 yard wrought, long.....	29.80
Light iron.....	10.00 to 11.00
Cast borings (clean).....	16.25 to 16.50
Machine-shop turnings.....	16.25 to 16.50
Mixed borings and turnings.....	16.25 to 16.50
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long.....	29.80
Stove pipe.....	26.20
Locomotive grate bars.....	26.20
Malleable cast (railroad).....	31.20
Old carwheels.....	26.20

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast.....	\$34.00
No. 1 heavy cast (columns, buildings materials, etc.), cupola size.....	34.00
No. 1 heavy cast, not cupola size.....	29.00
No. 1 cast (radiators, cast boilers, etc.).....	29.00

Cleveland

CLEVELAND, Sept. 17.

Iron Ore.—Iron ore producers appeared before the Steel and Steel Products Committee in New York last Friday and presented figures showing mining costs in underground mines to support their claims for an advance in ore prices Oct. 1. Operators of underground mines have felt that ore prices are not on an equitable basis with various iron and steel products and that they are not getting the share of profits going to other industries. The producers did not specify the amount of advance they thought they were entitled to. When ore prices were marked up 45c. a ton in June, operators of underground mines were not satisfied and since then wages of miners have advanced 10 per cent. If the Government decides to advance ore prices Oct. 1, the advance will affect about 20 per cent. of this season's shipments that are made from Lake Superior mines during the last quarter. Iron ore receipts at Lake Erie furnaces this year to Sept. 1 were 5,904,848 gross tons as compared with 5,299,782 tons during the same period a year ago. Furnaces, aside from those on Lake Erie during the corresponding period, took 8,490,753 tons of the 39,334,264 tons shipped to Sept. 1. Shipments to Lake Michigan ports to Sept. 1 were 2,990,120 tons to South Chicago, 2,732,164 tons to Gary and 779,365 tons to Indiana Harbor. Shipments to Sault Ste. Marie, Ont. were 387,520 and to Port Edward 200,770 tons. We quote, f.o.b., lower Lake docks as follows:

Old range Bessemer, \$6.40; old range non-Bessemer, \$5.65; Mesaba Bessemer, \$6.15; Mesaba non-Bessemer, \$5.50.

Pig Iron.—The scarcity of pig iron is growing more acute, there not being enough of any grade to take care of the tremendous demand. Stocks in furnace yards are becoming very low and many consumers have but a few days' supply. The foundry iron situation in the Cleveland territory is possibly worse than in some other districts because of the recent changing of one of the local furnaces from foundry to basic iron. Other producers are behind on shipments to foundries engaged on war essential work because iron on their books has been diverted to more essential industries by allocation. Some of the Southern furnaces are getting considerably behind on shipments for the same reason.

Allocations by the pig iron committee during the week were about 90,000 tons, or slightly more than the week before. Basic and foundry iron led the list with allocations of 33,000 tons of basic and 24,500 tons of foundry. Other allocations were 8,000 tons of Bessemer, 16,000 tons of malleable, 6,200 tons of low phosphorus and 2,000 tons of charcoal iron. The total allocations by the committee since May 1 amount to 997,000 tons. The pig iron committee is now receiving reports from blast furnaces under the new plan requiring monthly reports. Returns from the blast furnaces indicating the construction work they have under way or are planning with a view of increasing their furnace capacities are now being tabulated. New inquiry for iron to the first-half of 1919 has quieted down but a large proportion of consumers who have made inquiry have been unable to place orders. We quote delivered Cleveland, as follows:

Bessemer.....	\$36.60
Basic.....	33.40
Northern No. 2 foundry.....	33.40
Southern No. 2 foundry.....	38.00
Gray forge.....	32.40
Ohio silvery, 8 per cent silicon.....	47.90
Standard low phosphorus, Valley furnace.....	53.00

Coke.—Coke shipments from the Connellsville region are very good and some foundries with the addition of by-product coke that they have bought recently have been able to accumulate stocks. New inquiry is very light. With the 30c. reduction in by-product coke this coke is now quoted in Cleveland at \$7.97 f.o.b. ovens for furnace grades and \$8.97 for foundry coke.

Bolts, Nuts and Rivets.—Bolt and nut specifications are keeping up well, but new inquiry is not heavy. Labor shortage is growing more acute and makers are getting somewhat further behind on deliveries. An order for 15,000 tons of rivets for the Hog Island shipyard is being placed this week. Rivet specifications are heavy. A leading Cleveland rivet manufacturer has succeeded in securing sufficient labor supply to put his plant on double turn this week and so is largely increasing his output.

Finished Iron and Steel.—Considerable inquiry for small lots of steel is coming out, but the bulk of the orders for tonnages of any size is being allotted by the Government. An Akron rubber manufacturer has placed 3000 tons of special sections for rims for Government motor trucks. An Ohio shop has purchased 1000 tons of plates for oil and gas tanks. The Chinese Government is inquiring for 5300 tons of rails for next year. The Brier Hill Steel Co., Youngstown, has opened its books for plates to be rolled on its new mill which will be placed in operation shortly. The plate situation is growing tighter and some jobbers are trying to buy discards to replenish their stocks. Local plate mills are filled with Government orders for several months and have not been allotted additional tonnage recently. Some of the mills that are supplying the implement trade with Bessemer steel bars do not expect to be able to do so during the last quarter, as their Bessemer steel will be required for their rail mills. Hard steel bars are in good demand for reinforcing purposes and are getting scarcer. One Pennsylvania mill that has been supplying the trade in this territory is filled and has withdrawn from the market. The Government has placed 600 tons of hard steel bars for Panama Canal work. Nails are getting tighter and independent mills are unable to supply jobbers. Wire fence manufacturers are suffering from lack of wire and are scouring the market. The jobbing trade is in better shape to supply the demand for bars and small structural sections because of recent additions to its stock.

Steel bars, 4.07c.; plates, 4.42c.; structural material, 4.17c.; No. 10 blue annealed sheets, 5.42c.; No. 28 black sheets, 6.42c.; No. 28 galvanized sheets, 7.67c.

Old Material.—The demand for scrap continues very active and prices are firm on all grades. Cupola cast scrap, as well as other grades, except possibly busheling, is now bringing the Government price. Turnings and borings appear to be as scarce as ever in spite of the embargo against their shipment to blast furnaces,

which will be lifted this week, and which probably will make the situation tighter. The demand for heavy melting steel is heavy, but the limited supply is restricting sales, and some of the Ohio mills are complaining that scrap that should come to them is going to the Pittsburgh district. Cupola cast scrap is moving freely, the demand for this grade being stimulated by the scarcity of pig iron. We quote, delivered consumers' yards in Cleveland and vicinity, as follows:

Per Gross Ton	
Steel rails	\$28.00 to \$29.00
Steel rails, under 3 ft.	34.00
Steel rails, rerolling	34.00
Iron rails	39.00
Iron car axles	46.50
Steel car axles	46.50
Heavy melting steel	29.00
Cast borings	19.00
Iron and steel turnings and drillings	19.00
Hydraulic compressed sheet scrap	28.00 to 29.00
No. 1 railroad wrought	34.00
Cast-iron carwheels, unbroken	29.00
Cast-iron carwheels, broken	34.00
Agricultural malleable	29.00 to 30.00
Railroad malleable	34.00
Steel axle turnings	24.00
Light bundled sheet scrap	24.50 to 25.00
Cast-iron scrap	29.00
Cast-iron scrap, broken to cupola size	34.00
No. 1 busheling	30.00 to 31.00
Per Net Ton	
Railroad grate bars	\$24.00 to \$25.00
Stove plate	24.00 to 25.00

Cincinnati

CINCINNATI, Sept. 17—(By Wire).

Pig Iron.—The lines are being more sharply drawn and foundry iron can be obtained only by an essential industry. Some confusion has resulted in many melters who have urgent contracts in hand applying to Washington for relief. In most cases of this kind, they were advised to take this matter up with pig iron merchants so that there would be a clear understanding with the Government by both sides. Allocations of foundry iron have increased considerably of late and a great deal of iron will probably be diverted at an early date to consumers who have very important work in hand. The amount of high-sulphur iron that could previously be bought in the South occasionally has now dwindled to a point where the tonnage is insignificant. This off iron has been the principal source of supply for stove foundries and now these melters who have no Government contracts will soon be hard put to get any metal for future operations. Quite a lot of ferromanganese has been sold recently, but within the past few days there has been a let up in the demand for all kinds of ferroalloys. No complaints as to shipments of foundry and basic iron have lately been registered.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, No. 2 foundry and No. 2 soft	\$36.60
Southern Ohio, No. 2	34.80
Basic, Northern	33.80

Coke.—It is now definitely understood that by-product coke has been reduced 30c. per ton, the reduction taking place Sept. 1, as was noted in THE IRON AGE of Sept. 5, the exception being in the states of Alabama and Washington, where no change is made. This reduction will affect several by-product coke operations in this territory. Reports from the foundries which depend on Connellsville and Wise county for a supply of fuel are to the effect that shipments are moving freely and there are very few complaints on this account from any source. It is reported that some Pocahontas coke has been diverted to users in other territory, but the total tonnage involved is very small, and this action has caused no serious inconvenience.

Finished Material.—The jobbers' price on wire nails has been advanced to \$4.50 per keg base. There are practically no local stocks on hand, although some of the wholesalers have been promised relief within the next few days. The urgent demand for nails for the Air Nitrate Corporation's buildings at Ancor, a suburb, has cleaned out retail stocks. As far as barb wire is concerned, the jobbers are making no quotations because they have no wire on hand. It is somewhat fortunate that the demand from the country hardware

merchants is now slack. Deliveries on No. 10 blue annealed sheets can be made with fair promptness due to a small accumulated stock by one firm and also to the recent receipt of some mill shipments. As far as galvanized sheets are concerned, it is out of the question to get any from the mills without an urgent priority order. Iron bars represent about the only commodity that can be obtained by concerns not having strictly war work in hand, and the quantity of these to be had is limited.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large rounds and squares, 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.23c., and wire nails, \$4.50 per keg base.

Non-Ferrous Metal Scrap.—Business is brisk in heavy red brass and heavy copper. Yellow brass is also in demand. Very little block tin pipe can be had, but the call for it is not very strong. Heavy red brass is quoted around 22½c. to 23c., and heavy copper from 22 to 22½c. Lead is quite strong at 6¼c. to 7c., although business in lead is slow.

Old Material.—The only weak spot in the market is cast borings that have to be shipped to other territory. The only large melter of these in this vicinity has not bought any lately, and as a consequence the material has to be sent to Pittsburgh and Cleveland territory. As most of this scrap is collected in comparatively small quantities and has to be handled at least three times for loading it on cars, this causes the price here to be lower probably than in any other market. No. 1 machinery cast is in very heavy demand, and dealers are able to obtain the maximum price of \$34 per gross ton, delivered at consumers' plant, but if the regular commission allowed has been paid, the transaction has not come too light. The following are dealers' prices f.o.b. at yards, Cincinnati and southern Ohio, in carload lots:

Per Gross Ton	
Bundled sheet scrap	\$21.50 to \$22.50
Old iron rails	33.50 to 34.00
Relaying rails, 50 lb. and up	44.50 to 45.00
Rerolling steel rails	32.00 to 32.50
Heavy melting steel scrap	27.50 to 28.00
Steel rails for melting	27.50 to 28.00
Old carwheels	29.00 to 29.50
Per Net Ton	
No. 1 railroad wrought	\$29.50 to \$30.00
Cast borings	13.00 to 13.50
Steel turnings	14.50 to 15.00
Railroad cast	25.00 to 25.50
No. 1 machinery	29.50 to 30.00
Burnt scrap	17.50 to 18.00
Iron axles	40.00 to 40.50
Locomotive tires (smooth inside)	35.50 to 36.00
Pipes and flues	21.00 to 21.50
Malleable cast	24.50 to 25.00
Railroad tank and sheet	18.50 to 19.00

To Regulate Bedstead Industry

WASHINGTON, Sept. 17.—The War Industries Board has completed a conservation program for the metal bedstead industry. There are two schedules. The first covers the general manufacture of metal beds while the second is limited to manufacture of brass beds. The most important feature of the program is to force manufacturers who produce both steel and brass beds to discontinue the manufacture of the latter as well as to give up the use of brass ornaments on steel beds. The plans comprehend stringent reductions in the patterns of beds, in the designs of springs and the amounts of tubing used and in other changes which will conserve steel, brass and other materials as well as labor and transportation.

Electric Furnace Co. Buys Property at Salem, Ohio

The Electric Furnace Co., Alliance, Ohio, has bought from the McCaskey Register Co. the large vacant factory building in Salem, Ohio, formerly occupied by the American Cash Register Co., and expects shortly to move all its manufacturing operations to this Salem plant, covering 70,000 sq. ft. of floor space and 9 acres of land. The sales and executive offices of the Electric Furnace Co. will remain in Alliance for some time and perhaps permanently.

Metal Markets

The Week's Prices

Cents Per Pound for Early Delivery

	Copper		Tin		Lead		Spelter	
	New	York	New	York	New	York	New	York
Sept.	26.00	26.00	77.00	8.05	7.75	9.55	9.20	9.20
Oct.	26.00	26.00	77.50	8.05	7.75	9.55	9.20	9.20
Nov.	26.00	26.00	78.00	8.05	7.75	9.75	9.40	9.40
Dec.	26.00	26.00		8.05	7.75	9.75	9.40	9.40
Jan.	26.00	26.00	78.50	8.05	7.75	9.85	9.50	9.50
Feb.	26.00	26.00	78.50	8.05	7.75	9.85	9.50	9.50

*Nominal.

NEW YORK, Sept. 18.

More and more control of one kind or another is appearing in the various markets. The tone of all is strong, but there is little activity in any. Copper conditions and prices are unchanged. Tin is very quiet but a little stronger after further easing. Lead is under strict control and very scarce. Spelter is inactive but strong. Antimony is steady.

New York

Copper.—The market is devoid of news features. The labor situation continues to engage the serious attention of all concerned. One report is to the effect that were the actual situation really made public there would be considerable anxiety. Refinery output is below the recent averages, while the output of crude copper is not satisfactory. There seems at present to be enough which is being satisfactorily distributed by the Copper Producers' Committee at the 26c. price, which holds until Nov. 1. Jobbing prices are 27.35c. per pound for 5-ton lots and less.

Tin.—A good demand sprang up last week which continued yesterday and Monday for this year's delivery, but there was a decided lack of sellers—in fact there was very little tin to sell. The amount of business done was therefore not large. Far future delivery metal has been neglected lately but very little has been offered. The quotation for spot tin is now about 78.50c., New York, after a dip last week to about 77c. What has been regarded as an official announcement appeared late last week to the effect that the Allied Executive Tin Committee had been appointed to sit in London with authority to buy, distribute and control all tin supplies and prices for the Allies. The announcement as made is indefinite and leaves much to be desired. All importers and dealers on this side are completely in the dark as to what is to become of their business and it seems thus far impossible to gain any light. Whether they are to continue as intermediary agents for consumers in this country or are to be eliminated altogether is the puzzling question. One of these two alternatives seems the only outcome. Tin arrivals at Atlantic ports in September to Sept. 14 inclusive have been 1315 tons, with 1320 tons reported arrived at Pacific ports. The London market has been steady for nearly a week, spot Straits having been quoted yesterday at £344 per ton against £343 10s. a week ago.

Lead.—There is absolutely no change in the situation. Lead is very scarce and its sale and distribution is completely in the control of the Lead Producers' Committee, which has now been asked by the War Industries Board to take control officially. The committee is also to sell the metal. It is stated that the labor problem is one of the most serious to be contended with and that it is delaying output. The agreed maximum prices continue at 7.75c., St. Louis, or 8.05c., New York, with dealers allowed to ask no more than 8.55c. for less than carload lots. The lead market is strikingly similar now to the copper market.

Spelter.—The market continues strong but not particularly active. For September-October delivery the quotation on prime Western is largely nominal at 9.50c., St. Louis, or 9.85c., New York, with inquiry of only small proportion from the general trade. For November-December or last quarter about 9.20c., St. Louis, or 9.55c., New York, is asked and obtained.

But in most cases sellers are not anxious in view of the large sales in the past few weeks. It is understood that the Government has closed for the 6000 tons of Grade D for last quarter and that bids are to be opened to-day for 1000 tons of Navy C spelter. The terms of the sales of the 6000 tons are not made public. The weekly report of the Government shows an increase in surplus stocks of 2691 tons and a decrease in output of 169 tons.

Antimony.—The market is fairly firm at 14c., New York, duty paid, for prompt and early delivery of wholesale lots.

Aluminum.—Government maximum prices control the market for No. 1 virgin metal, 98 to 99 per cent pure, and for scrap at 33c. per lb. for 50-ton lots, at 33.10c. per lb. for 15 to 50-ton lots, and at 33.20c. per lb. for 1 to 15-ton lots.

Old Metals.—Lead is still strong. The market otherwise is generally unchanged. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	26.00
Copper, heavy and wire	25.00
Copper, light and bottoms	23.00
Brass, heavy	17.75
Brass, light	13.25
Heavy machine composition	25.50
No. 1 yellow rod brass turnings	15.00 to 15.25
No. 1 red brass or composition turnings	22.50
Lead, heavy	8.00
Lead, tea	6.50
Zinc	6.875

Chicago

CHICAGO, Sept. 16.—The steady demand for copper continues to be satisfied, despite reports of difficulty elsewhere. Tin is scarce, and there is a possibility of the quotation going higher in spite of the international attempt to fix maximum prices. Lead is in stiff demand, but distribution is entirely in the hands of the Lead Producers' Committee, which passes on all orders. Spelter is fairly active and its price is stronger. In antimony there has been a rather free movement, but the quotation is unchanged. We quote copper at 26c. for carloads and 27.30c. for part carloads; tin, 85c. to 86c.; lead, nominal at 7.85c. in carloads, 8.35c. per lb. for 1 to 25 tons and 8.60c. per lb. for less than 1 ton; spelter, 9.75c. to 10c.; antimony, 15.50c. to 16c. On old metals we quote copper wire, crucible shapes, 22.50c.; copper clips, 21.75c.; copper bottoms, 21.50c.; red brass, 22.50c.; yellow brass, 15.50c.; lead pipe, 6.50c.; zinc, 5.75c.; pewter, No. 1, 45c.; tinfoil, 50c., and block tin, 60c.

St. Louis

Sept. 16.—Non-ferrous metals have been quiet but strong during the week just passed with the closing quotations on car lots to-day as follows: Lead, 7.75c.; spelter, 9.12½c. In less than car lots the figures have been: Lead 8.25c.; spelter, 9.75c.; tin, \$1.10 and none available; copper, 27.85c.; Asiatic antimony, 16c. In the Joplin district, the weakness in second grade blende continued to some extent, but there was no marked falling off in price, with the figure holding at about \$55 basis of 60 per cent metal, with the usual amount sold to the sheet zinc makers from the first grade ores at \$75 per ton. The average for the week for the district was \$57.50 per ton. Calamine was quiet at \$30 to \$40 per ton, basis of 40 per cent metal, with the average for the week for the district at \$35 per ton. Lead was quiet at \$100 per ton basis of 80 per cent metal with the average for the week for the district at the same figure. On miscellaneous scrap metals, we quote dealers' buying figures as follows: Light brass 10c.; heavy yellow brass, 14c.; heavy red brass, 19.50c.; light copper, 18c.; heavy copper and copper wire, 20c.; lead, 6c.; zinc, 5c.; tea lead, 5c.; pewter, 30c.; tinfoil, 60c.; aluminum, 20c.

The Greensboro Gas Co., operating in Fayette, Greene, Washington and Westmoreland counties, Pa., has notified customers of an advance in price of natural gas from 30 to 35 cents per thousand feet, effective from Oct. 1.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

An advance in freight rates of 25 per cent from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, went into effect June 25, 1918. The rates from Pittsburgh, in carloads, to points named, per 100 lb. are as follows: New York, 24.5c.; Philadelphia, 23c.; Boston, 27c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, structural sizes, 3c.

Wire Products

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright basic wire, \$3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25; galvanized wire, \$3.95; galvanized barb wire and fence staples, \$4.35; painted barb wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets, \$4.40 base
Large boiler rivets, \$4.50
7/16 in. x 6 in. smaller and shorter rivets, 50-10 per cent off list
Machine bolts h.p. nuts, ¾ in. x 4 in.:
Smaller and shorter, rolled threads, 50-10-5 per cent off list
Cut threads, 50-5 per cent off list
Larger and longer sizes, 40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.:
Smaller and shorter, 40-10 per cent off list
Larger and longer, 25-5 per cent off list
Carriage bolts, ¾ x 6 in.:
Smaller and shorter, rolled threads, 50-5 per cent off list
Cut threads, 40-10-5 per cent off list
Larger and longer sizes, 40 per cent off list
Lag bolts, 50-10 per cent off list
Low bolts, Nos. 1, 2, 3, 50 per cent off list
Hot pressed nuts, sq., blank, 2.50c. per lb. off list
Hot pressed nuts, hex., blank, 2.30c. per lb. off list
Hot pressed nuts, sq., tapped, 2.30c. per lb. off list
Hot pressed nuts, hex., tapped, 2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank, 2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped, 2.00c. per lb. off list
Semi-finished hex. nuts:
¾ in. and larger, 60-10-10 per cent off list
9/16 in. and smaller, 70-5 per cent off list
Stove bolts, 70-10 per cent off list
Stove bolts, 2½ per cent extra for bulk
Tire bolts, 50-10-5 per cent off list

The above discounts are from present lists now in effect. All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$65; screw, rivet and bolt rods and other rods of that character, \$65. Prices on high carbon rods are irregular. They range from \$70 to \$80, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4½ in. and heavier, per 100 lb., \$3.90, in lots of 200 kegs of 200 lb. each, or more; track bolts, \$4.90. Boat spikes, \$5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective May 21 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., \$15 per package; 8-lb. coating, I. C. \$13.30; 12-lb. coating, I. C. \$17.00; 15-lb. coating, I. C. \$18.00; 20-lb. coating, I. C. \$19.60; 25-lb. coating, I. C. \$20.60; 30-lb. coating, I. C. \$21.75; 35-lb. coating, I. C. \$22.75; 40-lb. coating, I. C. \$24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill. Refined iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld					
Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/8, ¼ and ¾	44	17½	1/8 and ¼	23	+4
1/2	48	33½	¾	24	+2
¾ to 3	51	37½	1/2 to 1½	28	19
				33	17
Lap Weld					
2	44	31½	1½	18	3
2½ to 6	47	34½	1½	25	11
7 to 12	44	30½	2	26	12
13 and 14	34½	..	2½ to 6	28	15
15	32	..	7 to 12	25	12
Butt Weld, extra strong, plain ends					
1/8, ¼ and ¾	40	22½	1/8, ¼ and ¾	22	5
1/2	45	32½	¾	27	14
¾ to 1½	49	36½	¾ to 1½	33	18
2 to 3	50	37½			
Lap Weld, extra strong, plain ends					
2	42	30½	1½	19	4
2½ to 4	45	33½	1½	25	11
4½ to 6	44	32½	2	27	14
7 to 8	40	26½	2½ to 4	29	17
9 to 12	35	21½	4½ to 6	28	16
			7 to 8	29	8
			9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		Charcoal Iron	
3½ to 4½ in.	34	3½ to 4½ in.	12½
2½ to 3½ in.	24	3 to 3½ in.	5
2½ in.	17½	2½ to 3 in.	7½
1½ to 2 in.	13	2 to 2½ in.	2½
		1½ to 2 in.	3½
Standard Commercial Seamless—Cold Drawn or Hot Rolled			
Per Net Ton		Per Net Ton	
1 in.	\$34	1½ in.	42½
1½ in.	28½	2 to 2½ in.	18½
1¾ in.	27½	2½ to 3 in.	18½
1½ in.	22½	4 in.	20½
		4½ to 5 in.	22½

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows:

Blue Annealed—Bessemer		Cents per lb.
Nos. 8 and heavier		4.20
Nos. 9 and 10		4.25
Nos. 11 and 12		4.30
Nos. 13 and 14		4.35
Nos. 15 and 16		4.45
Box Annealed, One Pass Cold Rolled—Bessemer		
Nos. 17 to 21		4.80
Nos. 22 and 24		4.85
Nos. 25 and 26		4.90
No. 27		4.95
No. 28		5.00
No. 29		5.10
No. 30		5.20
Galvanized Black Sheet Gage—Bessemer		
Nos. 10 and 11		5.25
Nos. 12 and 14		5.35
Nos. 15 and 16		5.50
Nos. 17 to 21		5.65
Nos. 22 and 24		5.80
Nos. 25 and 26		5.95
No. 27		6.10
No. 28		6.25
No. 29		6.50
No. 30		6.75
Tin-Mill Black Plate—Bessemer		
Nos. 15 and 16		4.80
Nos. 17 to 21		4.85
Nos. 22 to 24		4.90
Nos. 25 and 27		4.95
No. 28		5.00
No. 29		5.05
No. 30		5.05
Nos. 30½ and 31		5.10

IRON AND INDUSTRIAL STOCKS

liquidation by Some Large Holders or Borrowers of Stock Causes the Market to Decline—Speculation Practically Halted

NEW YORK, Sept. 18.

Events in the past week in the stock market have tended to prove that it is at least of the same order as the essential industry. It has received less consideration than ever from those accustomed to devote time to it, and the market is really on the decline. It is no longer the independent organization it used to be, but is really taking orders from a combination of bankers who are safeguarding the money market. As a result of an intimation last week that it would be well for large borrowers to reduce the amount of their securities, the market declined, but not to an alarming extent. Steel common declined about 1/2 cent, with other steel and some industrial issues following. The coppers were but slightly affected. For this week the market has been quite inactive but, despite the most thrilling war news in many months. With the present restraint on the money supply, very little action in the market is looked for, at least until after the new Liberty loan is out of the way.

The range of prices in active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Chalm. com.	29 1/4 - 30 3/8	Int. Har. Corp.	
Chalm. pf.	83 1/2 - 83 3/8	pf.	104 - 105
Can. com.	43 1/2 - 45	Lackaw. Steel	80 - 82
Can. pf.	91 1/4 - 94	Lake Supe. Corp.	16 1/2 - 17 1/4
Car & Fdry.		Midvale Steel	51 - 52 1/2
Car & Fdry.	82 3/4 - 87 3/8	Nat.-Acme	31 1/2
Car & Fdry.		Nat. Enam. &	
	110 - 110 1/4	Stm. com.	50 1/2 - 51 1/4
Loco. com.	64 1/2 - 66 1/4	N. Y. Air Brake	119 1/2 - 120
Loco. pf.	98 1/2 - 98 3/4	Nova Scotia Steel	64 - 65
Ship com.	129 - 129 1/2	Pressed Stl. com.	67 1/2 - 68 1/2
Steel Fdries.	77 1/2 - 81 1/4	Pressed Steel pf.	95
Loco. com.	86 - 89 1/4	Ry. Steel Spring	
Loco. pf.	102	com.	66 1/2 - 67 1/4
St. Cl. B.	79 1/2 - 83 3/4	Ry. Steel Spring	
U. I. pf.	83	pf.	102 3/4 - 102 1/2
Fuel pf.	45 - 46	Republic com.	87 1/2 - 90 1/4
Steel com.	63 - 65 1/2	Republic pf.	102 - 102 1/2
Steel pf.	90 1/2 - 91	Sloss com.	59 1/2
Electric	143 - 147	Superior Steel	40 - 41 1/2
U. S. Steel	129 - 131 1/4	Un. Alloy Steel	37 - 38 1/4
States Steel	77 1/2 - 82 1/2	U. S. Pipe com.	12 1/2
Har. of N. J.		U. S. Steel com.	107 1/2 - 110
	125 - 126	U. S. Steel pf.	110 1/4 - 111
Har. of N. J.		Warwick	8 1/4
Har. Corp.	104 - 105	Westingh. Elec.	42 - 43 3/4
Har. Corp.	62 - 62 1/4		

American Locomotive Co. Annual Report

The American Locomotive Co., in its annual report for the year ended June 30, 1918, shows profits for the year of \$9,930,088.37, from which there has been deducted \$4,018,950.97 for income and war taxes, leaving a balance available of \$5,911,137.40. After payment of a usual 7 per cent dividend on the preferred stock dividends on the common stock aggregating 5 per cent or \$1,250,000, making a total of dividends paid for the year of \$3,000,000, there remained a surplus of \$1,137,400 out of which there was created a reserve for additions and betterments to the plants. The remaining profit of \$1,911,137.40 was added to the accumulated surplus of the company. The net profits for the year include \$893,811.70 obtained from the manufacturing business, the remaining profit being derived from the manufacture of locomotives. The deduction of \$4,018,950.97 for taxes fully provided for all income and war profits taxes computed in accordance with existing laws in the United States and Canada, and also includes an allowance of \$1,400,000 for anticipated increases in the United States war income and excess profits taxes for the six months ended June 30, last. During the year, the company expended for additions and betterments \$3,131,248.85, which included the purchase of a steel casting plant at Chester, Pa.; also additions to several of the existing plants, purchase

of equipment and re-arrangement of machinery. The plant of the Kline Motor Car Corporation at Richmond, Va., was bought and is being equipped for the manufacture of locomotive specialties. The company sold to the United States Rubber Co., New York, the plant at Providence, R. I., and to the Amoskeag Mfg. Co. the old locomotive plant at Manchester, N. H. Both plants had been previously dismantled and their value written down on the books of the company.

On April 30, last, the company received a contract from the United States Railroad Administration for 800 locomotives of standardized design, a number of which have been delivered. The report says that "the plants of all of the locomotive builders of the country will be taxed to their maximum capacity during the war and probably for some time thereafter to supply the requirements of the railroads operated by the United States Railroad Administration, industrial plants engaged in the manufacture of war essentials, and to meet the demands of our Government and its Allies for foreign service. It is believed that the standardizing of locomotive design for domestic railroads will be a substantial factor in obtaining maximum tonnage production from the plants of the various builders."

Industrial Finances

The seventh annual report of the Canadian Locomotive Co., Kingston, Ont., shows that profits from operation for the year ended June 30 last, after taking care of business profits war tax, amounted to \$677,937.02. Since the organization of the company, as shown by the statement of Aemilius Jarvis, chairman of the board, the profits have amounted to \$3,173,341, or an average of over \$450,000 per annum. This record includes 1915, when as a result of disturbed conditions occasioned by the war, the earnings were only \$134,000. From the year's profits have been written off \$100,000 to depreciation reserve account and \$25,000 to special replacement account. The Canadian Locomotive Co. has contracts on hand which will keep its shops fully occupied for many months.

The Birmingham Steel Corporation, Birmingham, Ala., a Delaware corporation, has increased its capital from \$1,000,000 to \$5,000,000.

To provide, in part, for extensions and betterments in its electric power plant and system, the Monongahela Valley Traction Co., Fairmont, W. Va., has arranged for a bond issue of \$5,500,000. It is now building an electric power plant near its coal properties. James O. Watson is president.

The Trumbull Steel Co., Warren, Ohio, which is issuing \$2,000,000 more common stock at par to provide needed working capital, is operating 23 tin mills with an annual capacity of at least 1,500,000 base boxes of plates, also nine sheet mills, two jobbing mills and two strip steel mills, a bar mill and a blooming mill. It recently installed five 100-ton open hearth furnaces and is completing two more of the same capacity. The new issue will give the corporation \$8,000,000 common stock, and \$6,000,000 preferred stock outstanding. Subscription rights terminated Sept. 10. If payments are not anticipated, they can be made in equal installments Oct. 1, 1918, Jan. 1 and April 1, 1919.

Judge Dickinson, United States Federal Court, Philadelphia, has directed the discharge of Robert Wetherill as receiver for the Pipe & Construction Co., Philadelphia, and the return of affairs of the company to the management of the board of directors. Mr. Wetherill was appointed receiver for the company, which is capitalized at \$5,000,000, on Sept. 22, 1917, due to lack of working capital and the inability of the company to meet its current obligations.

The Central Bronze Co., 44 Steuben Street, Brooklyn, has filed notice of dissolution.

Dividends

The Trumbull Steel Co., quarterly, 1 1/4 per cent and extra 2 1/2 per cent on the common, and 1 per cent on the preferred, payable Oct. 1.

The Youngstown Sheet & Tube Co., quarterly 2 per cent and extra 3 per cent on the common, and 1 per cent on the preferred, payable Oct. 1.

PERSONAL



HARRY L. WILLIAMS

Harry L. Williams, whose retirement as president of Hickman, Williams & Co. was noted in the Sept. 5th issue of THE IRON AGE, was born in southern Kentucky in 1863. He went to work for the Rising Fawn Iron Works in Georgia in 1880, and remained with it (and the Chattanooga Iron Co., which it controlled) for five years. By this interest he was commissioned to assist in selling its iron, with headquarters at Cincinnati. For the next six years he sold iron for the Rising Fawn Iron Co. and Rogers, Brown & Co., locating at Louisville, St. Louis and Nashville, in turn. In 1891 Mr. Williams joined R. B. Hickman and founded the partnership of Hickman, Williams & Co., with headquarters at Louisville, Ky. In 1893 he moved to Chicago and opened an office for the firm. Hickman, Williams & Co. were incorporated in 1913, and in May, 1914, Mr. Williams bought out his associates and proceeded to carry out plans which he had long contemplated for admitting the younger men of the organization to larger participation in the ownership of the business. In July, this year, Mr. Williams' associates bought out his interest in the company, and on Sept. 1 he retired from the active affairs of the iron business. In the future he will devote himself to his personal interests, and probably spend much of his time on his farm in Michigan. He has a host of friends and is regarded with affection by his associates and former employees.

S. Griswold Flagg, 3rd, junior partner of Stanley G. Flagg & Co., Philadelphia, and works manager of their Pottstown plant, has been commissioned a naval constructor with the rank of lieutenant, senior grade, U. S. N. R. F., and called to active service at the naval aircraft factory, League Island Navy Yard, Philadelphia, where he has been appointed assistant general superintendent and placed in charge of aircraft factory No. 1.

Frank P. Case, who resigned some time ago as general sales manager of the Braeburn Steel Co., Pittsburgh, has accepted a similar position with the Atlas Crucible Steel Co., Dunkirk, N. Y.

Severn Ker, president Sharon Steel Hoop Co., Sharon, Pa., has been made chairman of a committee that will devise a new form of government for Sharon.

W. D. Bunker, formerly vice-president and general manager of the Judson Mfg. Co., San Francisco, and who resigned that position some weeks ago, has been made a captain in the Engineer Corps and is reported to have sailed for France.

B. F. Bourne, president Bourne-Fuller Co., Cleveland, has been appointed manager of the Lake Division of the American Red Cross, succeeding James R. Garfield, who recently resigned.

Charles McKinstry, formerly roller in the plant of the Sharon Steel Hoop Co., has been made superintendent of hot mills to succeed E. A. Phelan, resigned. For the past five years Mr. Phelan was assistant to C. B. Cushwa, general superintendent of the Youngstown Iron & Steel Co., owned by the Sharon Steel Hoop Co., who also resigned, effective Sept. 2. James King, formerly a sheet mill roller in the plant of the Youngstown Iron & Steel Co., has been transferred to an important position in another department.

Lawrence C. Phipps, some years ago treasurer of the Carnegie Steel Co., Pittsburgh, who has been residing in Denver, Col., for some time, has been named Republican candidate for the United States Senate from that State.

George W. Hite, formerly acting sales manager of the Pittsburgh Iron & Steel Foundries Co., Pittsburgh works at Midland, Pa., has resigned, and has received a commission from the United States War Department in the ordnance production division. He is now located in Washington.

Frank E. Burrall, Green Bay, Wis., has been appointed chairman of Section 4, Region 17, of the Resources and Conversion Division, War Industries Board to fill the vacancy caused by the death of John C. Farty. Mr. Burrall is president of the Oneida Motor Truck Co. and other large concerns in Green Bay and vicinity.

W. D. Creider, president Saxon-Creider Machine Co., Erie, Pa., has been commissioned as captain in the Procurement Division of the Auto Truck Department of the Army.

Robert S. Maddocks, son of R. H. Maddocks, district sales manager in New York for the Central Iron & Steel Co., has joined the staff of the Smiley Steel Co. 111 Broadway, New York.

At the monthly meeting of the Pittsburgh Foundrymen's Association held in that city on Monday evening Sept. 16, A. P. Holland, Geauga Silica Sand Co., Cleveland, and W. H. Stanton, National Iron & Steel Publishing Co., Pittsburgh, were elected members while Major Joseph T. Speer, president of the Pittsburgh Valve Foundry & Construction Co. was elected an honorary member. Major Speer is a charter member of the association.

Bi-Monthly Settlement of Sheet and Tin Plate Scale

The bi-monthly settlement of the sheet and tin plate wage scales for September and October was made at Warren, Ohio, last week between the scale committee of the Amalgamated Association and the sheet and tin mills in the Central West that sign the scales. It was found that the average selling price on shipments of Nos. 26, 27 and 28 gage black sheets in July and August was 5.15c. per lb. at mill, Pittsburgh, and wages of sheet mill hands for September and October will remain the same as in July and August. This price is slightly higher than the Government prices for the period named, but this is explained by the fact that some of the sheet mills still have contracts for sheets on the books taken before the Government started to fix prices on which shipments are still being made, taken at higher than the Government prices. It was also found that the average selling price on shipments of tin plate in July and August was \$8 per base box, and wages for September and October will be the same for tin mill hands as in July and August. This average price is also 25c. per base box higher than the Government price, but, as in the case with sheets, there are still a few old contracts for tin plate on the books of the mills, taken at higher than the Government price. It is expected that when the next settlement of the sheet and tin mill scales is made in November these old contracts will have been cleaned up.

Purchasing Agents' Convention

The third annual convention of the National Association of Purchasing Agents will be held at Detroit Sept. 23-25. Headquarters will be at the Hotel Pontchartrain. It will be primarily a war convention. The topics assigned for discussion deal largely with the part which industrial purchasing agents may take in serving the interests of the country at this time. An open invitation is extended to purchasing agents in all industries. The offices of the association are at 21 Beaver Street, New York, in charge of Secretary L. Boffey.

Plan to Distribute Semi-Steel Shell Contracts

A second meeting of the makers of iron and steel castings in the Pittsburgh and other districts was held in the Chamber of Commerce rooms in that city Wednesday, Sept. 11, for the purpose of considering the plans of the Government for 33,000,000 semi-steel shells for war purposes. Among those present were George Oliver, regional adviser of the War Industries Board; Capt. C. A. Carpenter of the production division of the Ordnance Department; Capt. H. M. Huxley of the Ordnance Department, attached to the Engineering Division of the Ordnance Department; Lieut. J. A. LeMieux of the Ordnance Department in this city; Dr. G. W. Sargent, chairman of the Metallurgical Board of the Engineering Division of the Ordnance Department; Samuel Green and Frank Hall of American Radiator Co., Buffalo.

Capt. Carpenter said the foundries that do not make semi-steel castings would have to add the necessary equipment to do so, while the machine shops would be expected to add the necessary equipment for machining them. Capt. Huxley explained the various requirements for the shells, stating that about 25 to 30 per cent of the mixture in them is steel and the remainder iron. He further explained the specifications of the Government for the shells. Mr. Hall of the American Radiator Co., Buffalo, which concern is now making cupolas, described the cupola practice in connection with the manufacture.

As a result of the meeting a large number of iron and steel foundries in the Pittsburgh district will put their plants in shape to make the shells, and the machine shops will put in the equipment for machining them. Those present pledged their loyal support to the Government in this matter, and will get their plants in shape as rapidly as possible. A committee to have charge of the mobilizing of the plants was appointed, as follows: George L. Brown, Marshall Foundry Co., Erie; W. C. Rice, Pittsburgh Iron & Steel Foundry Co.; Charles J. Mesta, Mesta Machine Co.; W. Hamilton, Rosedale Foundry & Machine Co., and M. Benmeyer, Standard Engineering Co., Ellwood City.

Reading Steel Casting Co. to Make Shells

The Reading Steel Casting Co., Reading, Pa., has completed the erection of a 20-ton oil-fired acid open-hearth furnace in an extension to its present main foundry building. It is expected that the furnace will be producing steel this week. A large order for the Government for 9.2-in. cast-steel shell blanks will be filled in this department, the shells being cast in iron molds according to the most modern practice. Charles Stone, formerly superintendent of the Bayonne Steel Casting Co., Bayonne, N. J., has charge of this new department.

The Reading plant is busily engaged on all kinds of government steel castings in its converter and open-hearth departments. It is operating four side-blow converters and one oil-fired 10-ton acid open-hearth for such work. The monthly output now averages about 1250 tons of finished castings. The open-hearth furnace is used solely for producing the heavier castings. The company has been successful in producing 4-in. gun mounts and has started on a new order.

Enemy-Owned Ferrovanadium Sold

Three lots of ferrovanadium, seized some time ago and stored by the alien property custodian, were sold in Philadelphia and Primos, Pa., recently, under the supervision of Joseph F. Guffey, of Pittsburgh, director of the Alien Property Custodian's office at Pittsburgh. The three lots, amounting to 87,097 lbs., brought \$199,600. The average price is understood to have been from \$4.60 to \$4.65 per lb. of contained vanadium. The Philadelphia lot was sold to the General Steel Co. of New York. The Champlain Metal Co., New York, and the Atlas Crucible Steel Co., Dunelm, N. Y., bought the two lots sold at Primos. These have been owned by Austrian companies. The other lot was German-owned. The ferrovanadium had been stored in this country on orders from the Central Powers and stored.

OBITUARY

CAPT. HILBERT WALLBER, commander of the 120th Field Artillery, Thirty-second Division, American Expeditionary Forces, has been killed in action, according to advices received by his mother, Mrs. Carl Wallber, Milwaukee. Before entering the service Capt. Wallber was a member of the executive engineering staff of the Vilter Mfg. Co., Milwaukee, manufacturer of ice and refrigerating machinery, Corliss engines, etc. He was a graduate of the mechanical engineering department, University of Wisconsin, and was 33 years old.

PERSIFOR F. SMITH, for some years president of the Wellsville Plate & Sheet Iron Co., Wellsville, Ohio, taken over by the American Sheet & Tin Plate Co., and from 1900 to 1906 manager of the Wood works of the latter company at McKeesport, Pa., died at his home in the East End, Pittsburgh, on Sunday, Sept. 15. He is survived by two daughters and one sister.

ADDISON M. LITTLE, pioneer machine-shop proprietor of Wisconsin, and founder of the present Sailer-Whittemore Machine Co., Menasha, Wis., died in that city on Sept. 6, at the age of 82 years. He was a native of New York State, and went to Wisconsin in 1845. The business was organized originally under the name of James Little & Sons.

LIEUT. HEATH E. NOBLE, formerly employed as clerk in the office of Rogers, Brown & Co., New York, was killed in action in France July 29. The report of his death was referred to in THE IRON AGE last week, but official confirmation was not received by Lieut. Heath's parents until a few days ago. He was first lieutenant in Company I, 168th Infantry.

NICHOLAS KELLY, 74 years old, president N. Kelly & Sons Foundry Co., Pittsburgh, died at his home in that city on Wednesday, Sept. 11, after an illness of three months. Mr. Kelly had been engaged in various capacities in the foundry business for over 60 years.

W. H. STEIN, president and general manager, Primos Chemical Co., Primos, Pa., manufacturer of alloys, died last week.

Americans Will Own All Stock of H. Koppers Co.

A one-fifth interest, or 3000 shares of the 15,000 shares of the H. Koppers Co., Pittsburgh, was sold last week to Hamilton Stewart, a director of the company, and also vice-president of the Harbison-Walker Refractories Co., Pittsburgh. The par value of the stock is \$100, but Mr. Stewart paid \$100.75 for it. The 3000 shares were owned by Heinrich Koppers, a citizen of Germany, who is still in that country. The sale was under the supervision of Joseph F. Guffey, director of the bureau of sales of the Alien Property Custodian's office at Pittsburgh. Mr. Stewart states he represents American stockholders, and that when the sale of the stock is formally approved, which will be in a short time, the entire stock of the H. Koppers Co. will be American owned.

The company has a capital of \$1,500,000 and is owned now by Pittsburgh bankers and business men, the Mellon banking interest having the largest holdings. The company has been very successful, and in the past few years has built some of the largest by-product coke plants in the country, and also plants for the recovery of by-products. The company controls the Pittsburgh By-Products Coke Co., which owns the Seaboard By-Product Coke Co., the Minnesota By-product Coke Co., and the Melcroft Coal Co. It also owns the By-Product Coke Co. of Canada.

The Milliken Brothers Mfg. Co., New York, recently incorporated to take over special features of the former Milliken Brothers, Inc., Milliken, S. I., has removed from 99 Nassau Street to 1838 Woolworth Building.

Important Developments in Labor Troubles

President Wilson's Letter Results in Return to Work of Bridgeport Strikers—Bethlehem Steel Co. Expected to Accept Award of Board, but Asks for Additional Compensation

The past week has been one of numerous important developments in regard to the labor situation. The letter of President Wilson to the Bridgeport strikers, in which he condemned them in vigorous language, declaring that they were lawless and guilty of dishonorable conduct, and in which he told of the taking over by the Government of the plant of the Smith & Wesson Co., at Springfield, Mass., and referring to the owners as "recalcitrant," but not branding them as he did the strikers, attracted much attention, for it was considered a declaration of policy as to employers and employees throughout the country. On receipt of the letter, the Bridgeport strikers decided to return to work, but a considerable number of them had already left the city to seek other employment and there was much grumbling among some of those who remained and went to work. They positively refused to obey the order of the union officials to return to work, but awaited the letter of the President, which was received Saturday. At a meeting Monday they voted to return to work Tuesday, and did so. They have mailed to the President a letter of about 3000 words in which they appeal from the decision of the War Labor Board and ask for a rehearing of the case.

The appeal of the General Electric Co. from the award made by the National War Labor Board in its case is important, indicating a line of policy which will probably be followed by other companies dissatisfied with the awards of the board.

Prominent manufacturers of Hartford and other New England cities have signed a joint letter to Secretary Baker, strongly protesting against the taking over of the Smith & Wesson plant.

Of even greater importance than the Bridgeport controversy is that connected with the Bethlehem Steel Co., which is still unsettled. The strike of 25,000 miners in the anthracite region has been firmly met by Fuel Administrator Garfield and it is hoped that there will be no serious trouble.

The National War Labor Board, which is holding sessions in New York this week, expects to receive a statement on Thursday or Friday from President E. G. Grace, Bethlehem Steel Co., formally accepting the award of the War Labor Board in the Bethlehem labor controversy.

A committee of employees of the Bethlehem steel works visited Washington Friday, Sept. 13, and made complaint that the corporation was delaying putting into effect the award of the War Labor Board. Mr. Grace thereupon promised the board that he would comply with the award and would so notify the board. His letter had not been received up to Tuesday.

Mr. Grace told the War Labor Board that the award would cost the Bethlehem Steel Co. \$2,500,000 a month and asked for a provision for additional compensation. This is a matter which the board declined to pass upon, but it is assumed that the Bethlehem Steel Co. may make application for additional compensation on War and Navy department contracts.

An election will be held by the employees of the Bethlehem works to select committees to carry out the terms of the award. Full details of the War Labor Board's decision in this case were published in *The Iron Age* of Aug. 8. The decision granted the workers the right to organize and bargain collectively, ordered the revision or complete elimination of the bonus system now in operation, the revision of piecework rates and the establishment of a designated, guaranteed minimum hourly wage rate for some 5000 machine-shop workers in conformity with one of the scales now being applied by the War and Navy departments; it also applied the basic 8-hr. day, with payment of time and a half for all week-day overtime, double pay on Sundays and holidays, and provided for just overtime payment to pieceworkers. It also called upon the company to pay men and women alike when performing the same work and to allot women no tasks disproportionate to their strength. Specific wage rates were also granted in some cases.

President's Action Followed Conference

WASHINGTON, Sept. 17.—President Wilson's drastic action to end the strike of the ammunition workers in Bridgeport, Conn., who refused to accept the War Labor Board's award, was taken after long deliberation, for the Administration did not seem to desire to take radical action until every effort at peaceful settlement had been exhausted. There was no question, however, that the Bridgeport strike was the crucial test of the War Labor Board's power, for its decision in this case was the first in which it had not acceded to all the workers' demands. So it was really the first occasion on which the disappointment of the laborers could show itself.

The delay in the decision of the President seems to affirm the report that there was divided counsel in the Administration over the action to be taken. The War Department, especially the Ordnance officials vitally affected by the delay in the Bridgeport output, favored drastic steps. The Department of Labor is reported to have favored a policy which would give the workers every opportunity to yield more gracefully. But there seemed no yielding at Bridgeport, where the unreasonable attitude of some of the employees was revealed in their threat of a strike a month ago, when

their ultimatum speeded up the decision of the War Labor Board.

The final action of the President on Friday, however, had the full support of the War Labor Board. It followed long conferences on Thursday of practically all the officials in Washington interested in labor questions. The letter written by the President reflected the views of both former President Taft and Frank P. Walsh, the joint chairmen of the board.

For the labor advisers of the Administration, the refusal of the Smith & Wesson Co., Springfield, Mass., to accept the Labor Board's award in their case furnished welcome opportunity to use that declaration as a precedent. The President also referred to the Smith & Wesson case in his letter to the Bridgeport workers, declaring that he had "exercised a drastic remedy with recalcitrant employers" which made it his equal duty to use similar means against "lawless and faithless employees." He therefore threatened these strikers that if they refused to accept the Labor Board's award they would be barred for one year from employment in the war industries of their community or in any industry of the Government, including the Shipping Board and the Railroad Administration. Even more important

was his threat that the draft boards would reject their claims for further exemption from military service. At the same time that the President's letter was given out the War Department announced that it had commandeered the Smith & Wesson plant.

The letter of the President to the Bridgeport strikers is of such unprecedented importance that it deserves reprinting in full. It is addressed to "District Lodge, No. 55, International Association of Machinists, and other striking workmen of Bridgeport, Conn., 1087 Broad Street, Bridgeport, Conn. The letter follows:

THE WHITE HOUSE,
WASHINGTON, Sept. 13, 1918.

Gentlemen:

I am in receipt of your resolutions of Sept. 6, announcing that you have begun a strike against your employers in Bridgeport, Conn. You are members of the Bridgeport branches of the International Union of Machinists. As such, and with the approval of the national officers of your union, you signed an agreement to submit the questions as to the terms of your employment to the National War Labor Board and to abide the award which, in accordance with the rules of procedure approved by me, might be made.

The members of the board were not able to reach a unanimous conclusion on all the issues presented, and as provided in its constitution, the questions upon which they did not agree were carried before an arbitrator, the unanimous choice of the members of the board.

The arbitrator thus chosen has made an award which more than 90 per cent of the workers affected accept. You, who constitute less than 10 per cent, refuse to abide the award although you are the best paid of the whole body of workers affected, and are, therefore, least entitled to press a further increase of wages because of the high cost of living. But whatever the merits of the issue, it is closed by the award. Your strike against it is a breach of faith calculated to reflect on the sincerity of national organized labor in proclaiming its acceptance of the principles and machinery of the National War Labor Board.

If such disregard of the solemn adjudication of a tribunal to which both parties submitted their claims be temporized with, agreements become mere scraps of paper. If errors creep into awards, the proper remedy is submission to the award with an application for rehearing to the tribunal. But to strike against the award is disloyalty and dishonor.

The Smith & Wesson Co. of Springfield, Mass., engaged in Government work, has refused to accept the mediation by the National War Labor Board and has flaunted its rules of decision approved by Presidential proclamation. With my consent the War Department has taken over the plant and business of the company to secure continuity in production and to prevent industrial disturbance.

It is of the highest importance to secure compliance with reasonable rules and procedure for the settlement of industrial disputes. Having exercised a drastic remedy with recalcitrant employers, it is my duty to use means equally well adapted to the end with lawless and faithless employees.

Therefore, I desire that you return to work and abide by the award. If you refuse, each of you will be barred from employment in any war industry in the community in which the strike occurs for a period of one year. During that time the United States Employment Service will decline to obtain employment for you in any war industry elsewhere in the United States, as well as under the War and Navy Departments, the Shipping Board, the Railroad Administration, and all other Government agencies, and the draft boards will be instructed to reject any claim of exemption based on your alleged usefulness on war production.

Sincerely yours,

WOODROW WILSON.

Concerning the taking over of the Smith & Wesson plant, the War Department issued the following statement:

The plant of the Smith & Wesson Co. at Springfield, Mass., manufacturing pistols for the War Department, has been commandeered under Section 120 of the National Defense Act, for the duration of the war, and an officer of the Ordnance Department has been placed in charge of further operation of this industry.

This action was made necessary by the refusal of the Smith & Wesson Co. to abide by the award of the National War Labor Board, rendered Aug. 22, 1918. This is the only instance of a manufacturer under contract with the War Department arbitrarily rejecting an award by the agency set up by the President for the maintenance of industrial peace during the war.

The War Labor Board's finding in the Smith & Wesson case was made upon a recommendation by Joint Chairman Frank P. Walsh and Frederick N. Judson, acting joint chairman in the absence of Mr. Taft. The Walsh-Judson report recommended that the company discontinue, for the period of the war, its practice of compelling employees to sign individual contracts, one clause of which bound the employees not to join a trade union; that the right to join trade unions be extended to the workers and that a system of collective bargaining be established in the Smith & Wesson plant. Under the operation of such a system, the workers elect shop committees to represent them in negotiations with the employer on all questions of industrial relations. The demand of the workers for a 25 per cent increase in pay was not conceded in the recommendation, it being stated that the question of wages could best be worked out through the operation of the collective bargaining system. These recommendations were duly approved by the War Labor Board, and it became the duty of the Smith & Wesson Co., as well as its employees, to comply. The workers have indicated their willingness to do so, but the company demurred on the ground that it had not agreed to submit any of its legal rights to the War Labor Board for determination and that to comply with the award would be to abandon methods upon which it had built its business to a high state of efficiency. Further, in its letter rejecting the War Labor Board's findings, it said:

"The Smith & Wesson Co. sees no reason why it should abandon its lawful and legitimate method of doing business known and proved by it to be conducive to industrial peace and high efficiency for the fantastic method outlined by the War Labor Board in its recommendations for dealing with its employees."

A strike at the Smith & Wesson plant involving demands for collective bargaining, the right to join trade unions and the elimination of the individual contract, were the direct cause of Government intervention in the controversy between the company and its employees.

The language employed by the company in the foregoing paragraph was held to be calculated to induce other employers to avoid the jurisdiction of the War Labor Board and to defeat the object of the President in its creation, and the company's general attitude toward the reasonable findings of the board was deemed such as might be expected to disturb industry and to interfere with production.

The recommendations contained in the War Labor Board's finding are in thorough accord with the principles and policies to govern industrial relations for the period of the war promulgated by the President and made the constitution of the War Labor Board. These principles and policies were adopted by duly selected representatives of organized employers and workers of the United States. It is the policy of the War Department to give effect to the decisions of the War Labor Board in all cases coming under the jurisdiction of the department.

General Electric Appeals Pittsfield Award

The General Electric Co. filed, Sept. 12, an appeal from the award of the National War Labor Board affecting its Pittsfield, Mass., shops. It particularly asks the board to disregard the results of the elections now being held outside of the plant for departmental committees, claiming that elections thus held tend to separate the company and its employees into two hostile camps "and to invite, at once, the effort to convert an open into a union shop."

An appeal is made from all the findings because the company believes some are unauthorized and unjust. It states its willingness to abide by the following decisions: Day work rate; piece work rate; basis for

estimating rates, as interpreted by Examiner Stoddard; night work bonus; overtime, as agreed to and interpreted by the examiner; readjustment of rates, with the addition thereto of agreements arrived at with representatives of the employees and the examiner; individual contracts, as interpreted by the examiner; interpretation of the award.

That no attempt was made by the section of the board rendering the award to hear and adjust the controversies with the employees is claimed by the company in this language:

Our case was transferred, without our knowledge or consent, from the original section to which it was assigned to

the joint chairmen, upon whom was thereby imposed a duty not contemplated in the procedure of the board. Before the new section, though we have repeatedly requested it, we have had no hearing and they have never conferred with us relative to any adjustment of our controversies.

Right of Hearing Before Board

The section of the board referred to above consisted of Joint Chairmen Taft and Walsh, to whom the Pittsfield controversy was finally referred after the full board had made certain decisions regarding individual contracts and committee elections in a public place. The full board had considered these matters after Adam Wilkinson, Chicago, representing the employees, and Frederic C. Hood, Boston, for the company, had failed to reach an agreement. The company claims that the right of hearing before the full board was reserved and agreed upon by the company, its employees, Mr. Wilkinson, and Mr. Stetson, acting for Mr. Hood. The company contends that the full board has never heard nor determined its case, as provided in its method of procedure, when the board, through sections, finds it impossible to settle a controversy.

The company further contends that a minimum wage is objectionable and, even if established, should not apply to unskilled workmen during the training period, nor to ordinary labor who cannot speak the English language and who have been in the company's employ less than six months. In stating its objections to the minimum wage, the company says:

We believe the minimum wage is wrong in theory. Its tendency is to exclude from employment many deserving persons. It is economically unsound, for it imposes upon industry a burden which should be borne by the whole community. A general minimum wage for all labor is indefensible. Many occupations must of necessity be limited to workers for whom a living wage below any theoretical average is sufficient.

The policy of equal pay for equal work for women is not objected to, providing that additional assistance or special equipment is not required by the women. One phase of the award that covers the retroactive payment of wages is treated of in the appeal in these words:

Retroactive Payments

Those former employees who, regardless of their obligations to us and of the nation's great need for our war production, have selfishly chosen to take their chance of self-betterment, without awaiting your award, are entitled to no consideration either from us, or from a board constituted for the express purpose of affording our country industrial stability and assuring it a sufficient production of military necessities in a time of war. We are glad to make these payments to all employees leaving our employ to enter the Army and Navy and are willing also to extend them to employees compelled by sickness to give up their work. We would also be willing to make these payments in such other individual instances where by reason of unusual circumstances it may seem to us just.

Piece Rates

An objection is raised to an interpretation of the examiner on the question of piece rates. The appeal says:

Any scheme of guaranteeing earnings to piece workers is contrary to the basic theory of piece-work compensation. It may operate to place a premium on inefficiency and laziness. It is unjust to us and to the nation.

Election Outside Plant

While the company does not object to departmental committees as such, it voices its objection to their election outside the plant in part as follows:

The board, in its principles, has declared that neither union nor the open shop should be disturbed during the period of the war. Our shop is an open shop. To compel elections outside the plant is to bring the management and its employees who should co-operate, immediately to the parting of the ways—to separate them into two hostile camps, to promote industrial conflict and to invite at once the effort to convert an open into a union shop. Since your award and pending this appeal, elections have been held outside the plant, notwithstanding our protest. This protest we again renew, and we ask that the results of those elections be disregarded.

We suggest that you obtain from the examiner the percentage of attendance at these elections. We are informed that it is small, as we believed it would be. We cannot, however, refrain from expressing a certain gratification at finding that many of our employees are apparently not ready to avail themselves of the opportunity for hostile alignment that your award presents.

Application is General

The system for the settlement of industrial disputes now being installed in the Pittsfield plant is of general interest, as the War Labor Board purposes applying it in the Bethlehem Steel case and probably in the Smith & Wesson and other cases. Its basic idea is the election of departmental committees to present grievances and mediate with the company. The Pittsfield award outlines their work as follows:

The duties of the department committees shall be confined to the adjustment of disputes, which the shop foreman, and the division superintendents and the employees have been unable to adjust. The department committees shall meet annually and shall select from among their number three employees who shall be known as the committee on appeals. This committee shall meet with the management for the purpose of adjusting disputes which the department committees have failed to adjust.

Numerous Committees

In the Pittsfield works there will be about 50 departmental committees, representing approximately 7000 employees. Most of these committees will consist of three members, but some of the larger departments will have committees of five members. The various unions involved claimed that 75 per cent of the working force were union members, but the company claimed that not more than 50 per cent belonged to the unions. The unions desired to have the elections held in the union halls, but the board decided that the elections should be held in public halls and these elections are now in progress and it is expected that this work will be completed by Oct. 1. The attendance at the elections has been far short of the full number of employees in the departments. In the early elections, one department was represented by 63 per cent of the qualified voters, another department by 40 per cent and another by about 30 per cent, according to figures given by the *Springfield Republican*. W. L. Stoddard, the examiner, is quoted as explaining this situation by the difficulty he had in imparting information about the elections to the employees due to the refusal of the management to permit the use of the bulletin boards in the plant for the posting of notices. The company gave Mr. Stoddard the payroll lists for use in checking the names in each department.

Election Rules

Mr. Stoddard has established election rules which provide for the nomination and election of a permanent department chairman, who presides jointly with the examiner. The election of the committee is by Australian ballot and each nomination must be supported by at least 10 qualified voters. The election committee comprises 10 men, five union and five non-union. The company permitted the posting of notices calling the attention of the employees to the election of non-union men to the committee. The voting hours for department committees are from 5.15 to 9 p. m.

The award established a minimum wage for male workers of 42c. an hour and for female workers of 30c. an hour. The management seeks to have established a minimum of 38c. an hour for probationers during their first two months of service, this rule now prevailing at the Schenectady plant of the company. The examiner has ruled that the individual contracts with employees now in force shall stand, but that no new contracts shall be made. The employees desire a one-and-one-half rate for overtime, piece work, which they claim is paid at the Schenectady plant, and the crane-men, who have been advanced 20 per cent, desire a readjustment to the rates now prevailing at the Schenectady plant. The crane-men also seek separate committee representation instead of being compelled to vote with the men in the department in which they are

working. It is understood that the company opposes this, as it would amount to union recognition, which it considers desirable to avoid.

The new wage schedule goes into effect Sept. 15 and the back pay to May 1 will be paid Sept. 28. It is reported that this will amount to \$500,000.

Increased Efficiency of Coke Workers

UNIONTOWN, Pa., Sept. 14.—Fruits of the recent recognition by the United States Government of the Czecho-Slovak Government have developed to a remarkable degree in the Fayette County coal fields. For many years and particularly since the outbreak of the European war, there has been an anomalous situation due to the great numbers of alien born workers in the mines and on the coke yards. Thousands of these workmen have been born under the flag of the dual monarchy to which they owed allegiance, but in the case of the majority not of their own volition. With aliens of nations allied with the United States working in the same region, there was brought about more or less friction although it was kept at a minimum because in most instances the true situation was realized by all concerned. With almost negligible exceptions, the so-called Austrian element was made up of the Slavic peoples who had been ground under the Hapsburg tyranny and were never more than passively favorable to the cause of the Central powers. With the formation of the Czecho-Slovak nation and its recognition by the various Allies and finally by the United States,

the situation was changed. The workers realized that it was actually their fight; that they had a live national interest of their own in the war and as a result the individual efficiency of the workers has shown a decided improvement in the past few weeks. For the week ending Sept. 7, the coal and coke production in the Fayette County coal region broke all records. War shortage was eliminated by half; a full day was put in on Labor Day; and, while the number of men employed was smaller, the maximum output was the best in the history of the region. This increased individual efficiency is credited in notable measure by the Fuel Administration to the governmental recognition of the Czecho-Slovak nationals. A number of Czechs from this region have been enlisting in the Czecho-Slovak armies being recruited in the United States. This has been at a minimum, however, for the Czecho-Slovaks themselves realize and through their employers have been brought face to face with the facts that by sticking by their posts and supplying the sinews of war they are doing greater work than by joining the actual fighting forces.

Strike in Eastern Mills Threatened

WASHINGTON, Sept. 17.—In an effort to avert a general strike of the workers in mills affiliated with the American Association of Iron, Steel and Tin Workers east of the Mississippi, the War Labor Board has fixed Thursday for a hearing at Philadelphia of their demands in the plant of the Reading Iron Co. The award is then to be applied to all the other corporations affected.

Workers in Essential Industries

A strike of about 125 men at the Lebanon, Pa., coke works of the Bethlehem Steel Co., Sept. 8, caused a suspension of operations. The men ask for a scale of wages similar to that of the workmen employed at the Bethlehem coke plant, or 37½c. per hour, with 10 per cent bonus, for laborers; at Lebanon the rate is 35c. per hour, and no bonus. The men have been discharged by the company and are said to have made an appeal to officials at Washington.

An appeal of "Stop that waste" has been made to the employees of the E. I. du Pont de Nemours & Co. at Gibbstown, N. J., calling attention to the fact that during August a total of 2504 days were lost at the powder works by men "laying off"; this figures 20,032 hours, and at 50c. per hour, \$10,016.

Boilermakers at Baltimore, affiliated with the union, have received a wage advance from 50 to 70c. per hour.

A number of machine molders at different plants at Buffalo and Tonawanda, N. Y., declared a strike Sept. 9, with a demand for wage increase from \$5.50 a day, as now being received, to 75c. an hour, and recognition of their union.

Two hundred employees of the H. H. Franklin Mfg. Co., Syracuse, N. Y., have presented a petition asking for a wage advance. The men on night shift have been working 12 hours, from 6:30 p. m. to 6:30 a. m., with half-hour off for meal. It is asked that all time over 9 hours be paid for as time and one-half, the same as the day men receive, or a 10-hr. shift at the existing rate of pay for 12 hours.

In connection with the formal ratification of 13 community labor boards in New Jersey to co-operate with the United States Employment Service, the following men are among those selected to serve on the different boards of three members in the various communities: Jersey City, Eugene Riotte, president the Standard Motor Construction Co.; Orange, William B. Dickson, vice-president and treasurer Midvale Steel & Ordnance Co.;

and Mark Jones, Thomas A. Edison Co.; Paterson, J. F. Beardsley, E. I. du Pont de Nemours & Co.; Perth Amboy, A. C. Clark, superintendent Raritan Copper Works; New Brunswick, William H. Waldron, president John Waldron Machine Co.; Phillipsburg, James M. Fortune, general manager, Ingersoll-Rand Co.; Camden, A. H. Freeman, secretary Victor Talking Machine Co.; Bayonne, R. C. Stanley, vice-president the International Nickel Co.

War Construction Work

WASHINGTON, Sept. 16.—The War Department has extended the jurisdiction of the Cantonment Adjustment Commission to embrace all other construction work which may be from time to time during the war carried on by the War Department, such as aviation fields, warehouses, storage facilities, and the like. Its name has been changed to the "Emergency Construction Wage Commission."

This commission will now have the responsibility of adjusting and controlling wages, hours and conditions of labor in all army construction work being done or to be done by the War Department. The commission consists of E. M. Hopkins, chairman, representing the public; Col. J. H. Alexander, representing the army; and J. R. Alpine, acting president of the American Federation of Labor, representing organized labor.

Employment Management Courses in Nine Universities

An employment management division has been established by the War Industries Board at 717 Thirteenth Street, N. W., Washington, D. C. War emergency courses in employment management have been arranged for in nine universities, and both men and women who have already had a basic experience of at least three years in industrial life and factory methods are accepted. Employers of labor are urged to suggest applicants for the courses, and they should address Capt. Boyd Fisher at the address named. The courses are given at Harvard University in co-operation with the Massachusetts Institute of Technology, at Boston University, Columbia University, the University of Rochester, Carnegie Institute of Technology and the University of Pittsburgh, the University of Washington, Seattle, and the University of California at Berkeley. There are no charges for the course except the outlay for living expenses and about \$15 for books and supplies.

High Speed Tool Steel Market

In the Chicago territory, the outlook for high-speed tool steel is better than it has been because of the increase in munitions work in this section. Carbon tool steel, on the other hand, shows a tendency toward quiet because of the lessened activity of manufacturers of so-called non-essentials. The Symington-Chicago Corporation will be a large consumer, as the consumption of high-speed steel goes, when its plant is in operation later this year. Shell and munitions shops already in operation have augmented the demand. The market for such steels never "booms," because the amount required is relatively small, and there usually is enough to supply all needs. As a rule, the Government maximum price of \$2 per lb. is adhered to by sellers, although there have been reports of \$1.75 or less being done where fairly large quantities were involved.

Edgar Allen & Co., Ltd., Sheffield, England, Chicago and New York, announces pleasing news with respect to its ability to supply its brands. It received but meagre shipments last year, but recently the British Ministry of Munitions announced that it would allow more liberal exports of high-speed steel than had prevailed, and the Chicago house of Edgar Allen & Co. was asked to specify the sizes for which it had the greatest need. The desired information was cabled and a shipment of 50 tons has since arrived, also an invoice showing that about 40 tons more is on the way. Their product, at the Government maximum price, has been in excellent demand, although it is admitted that competitors have sometimes sold at less than \$2 per lb. England did not restrict the exportation of ordinary carbon steel, inasmuch as it contains no tungsten, which it was sought to conserve. It is the understanding of the sellers of foreign tool steels that the maximum price fixed by the Government does not apply to steels made abroad, one representative stating that such a decision was made by Director Replogle of the War Industries Board.

Prosperity of German Machine Tool Industry

The report for 1917 presented to the recent annual meeting of the Association of German Machine Tool Works indicates how greatly the value of the production of machine tools has increased during the war, and especially in 1917. In 1913 the value of the German production was about 250,000,000m., in 1914 it rose to about 325,000,000m., and in 1917 it reached 800,000,000m. Meanwhile, however, the average cost price of the machines increased by about 100 per cent over peace prices. Expensive new plant has had to be installed to meet the enormous demand, and now that government orders are falling off the market is being flooded with finished machines, and works and merchant stocks, which had been depleted in 1916, are again accumulating. At the end of 1917 there was still a strong demand for precision machine tools, which were then scarce, but the same conditions do not apply to repetition work of medium qualities and to machinery for munitions. At present the scarcity of raw material is restricting the output, but the question comes up whether production on the same scale as hitherto is likely to find a market. The report says that it is a mistake to turn out repetition work of doubtful quality, and it is hopeless to expect to sell large quantities of machine tools abroad at low prices. The future lies in the production of high quality. Germany's allies were supplied with machine tools in 1917 to the same extent as the home country. By controlling prices the association guarded against German machine tools being re-exported from neutral countries at low prices, and it was determined that on no condition should machine tools be sold abroad at lower prices than in the home market.

The Horizontal Hydraulic Hoist Co., 35 Twenty-fifth St., Milwaukee, Wis., has purchased the business of the Young Patent Hoist Co., and will continue the production of hoists and dump bodies on a more extensive scale.

Orenstein-Arthur Koppel Co. Plant Sold

On Thursday, Sept. 12, there was sold at public auction, under the orders of the Alien Property Custodian, the plant of the Orenstein-Arthur Koppel Co., with allied interests located at Koppel, Pa., about 30 miles from Pittsburgh. The plant brought \$1,312,000, and was sold to W. A. Chamberlain, auditor of the Pressed Steel Car Co. The price secured was within \$138,000 of the appraised value, which was \$1,450,000. Provided it is approved by the Alien Property Custodian, the sale will be formally closed in 15 days and the properties turned over to Mr. Chamberlain, who will pay 25 per cent of his bid upon acceptance, 25 per cent within 30 days, 25 per cent within 60 days thereafter, and the remainder upon the delivery of the deed for the property, within 90 days.

The bidding was begun by Harris Brothers & Co. of Chicago, with an offer of \$200,000. It rose by \$50,000 steps until \$900,000 was bid by the Manhattan Machinery Exchange of New York, represented by Theodore Friedberg, with three bidders remaining. The bidding went up to \$1,000,000 by \$25,000 steps, that figure being offered by William E. Coffin, representing Coffin & Co. of New York. The bidding then resolved itself into a contest between Mr. Coffin and Mr. Chamberlain, with the latter the highest bidder ultimately by a \$1,000 margin.

Employees of the plant, which has continued in operation since it was seized by the Government some months ago, watched the selling with a good deal of interest. The plant, which has been operated for several months under the direction of T. Hart Given, president of the Farmers' National Bank, Pittsburgh, who represents the Alien Property Custodian, produces narrow-gage railroad construction for the interior of industrial plants, and makes a specialty of mine cars. The total property amounts to about 450 acres. The properties sold include the Orenstein-Arthur Koppel Co., its buildings, equipment, business and good will; the Koppel Land Co., owning 49 houses, a hotel building, and 700 plotted lots; the Beaver Connecting Railroad Co., the Koppel Water Co., the Pennsylvania Car & Mfg. Co., the Universal Railways Products Co., and the Koppel Sales Co. It is believed the Pressed Steel Car Co., if it secures possession of the plant, and this is likely to be the case, will operate it, making the same lines of products as before, but this is not officially confirmed.

Wayne Steel Co. Will Build Steel Plant at Erie, Pa.

The Wayne Steel Co., Erie, Pa., has been incorporated with a preferred capital stock of \$2,000,000 and plans to establish an open-hearth steel plant in that city. Its intention is to first install two 25-ton basic furnaces and a blooming mill. The company announces that it has secured control of the United States Horse Shoe Co., Erie, and the Canadian Horse Shoe Co., Ltd., Hamilton, Ont., through the purchase of the majority of the capital stock of the former company. The new company has acquired a 6-acre site adjoining the United States Horse Shoe Co.'s plant and plans to supply both its affiliated companies with steel for the manufacture of horse shoes. L. A. McElroy is president of the three companies.

Ford to Build Another Tractor Plant

Announcement has been made by the Ford Motor Co., Detroit, of the purchase of 189 acres of land on Green Island, near Albany, Mich., on which it is intended to build a plant for the manufacture of farm tractors. Whether construction of the plant will be begun soon or deferred until after the war will depend upon the Government, it was stated. Mr. Ford's secretary said that the Government might decide that increased production of farm tractors was a war necessity and give permission for the construction of the plant at once.

Machinery Markets and News of the Works

BUY FOR PISTOL MAKING

Firms Having Contracts Purchase Tools

Ordnance Department Arranging for Manufacture of Semi-Steel Shells

Placing of contracts for army pistols has resulted in considerable business in light machine tools. The Winchester Repeating Arms Co., New Haven, Conn., and Landers, Frary & Clark, New Britain, Conn., have bought in the New York market for pistol work. The National Cash Register Co., Dayton, Ohio, is also reported to have taken on a pistol contract. Another is pending with a Philadelphia company.

Efforts of the Ordnance Department to place contracts for semi-steel shells, of which millions are required, have resulted, so far as the machine-tool trade has learned, in conversion of four plants to this class of work. Rathbone, Sard & Co. will devote their Albany, N. Y., and Aurora, Ill., plants to semi-steel shell-making and are buying machining equipment. Foster, Merriam & Co., Meriden, Conn., and the Michi-

gan Stove Co., Detroit, also have contracts and will require tools.

Production of airplane engines is being greatly stimulated. The Ford Motor Co., Detroit, and the Buick Motor Car Co., Flint, Mich., have recently bought additional equipment for increasing output of Liberty engines. The H. H. Franklin Mfg. Co., Syracuse, N. Y., is now buying tools for a large amount of airplane motor work, including 100 Hispano-Suiza motor crankshafts a day, which will be made for the Wright-Martin Aircraft Corporation, New York, and the Pierce-Arrow Motor Car Co., Buffalo.

The Bethlehem Shipbuilding Corporation, Bethlehem Pa., continues as a large buyer of tools for its new shipyard at Alameda, Cal. The Bethlehem Steel Co. is also inquiring for a small list of tools, mostly boring machines.

China's co-operation in our shipbuilding program is emphasized by the purchase of 12 plate-working machines for a shipyard in that country.

Detroit automobile companies are preparing to change over to war work on Jan. 1. The Hudson Motor Car Co., Detroit, intends making munitions and has inquired for equipment for making 2000 155-mm. shells a day.

New York

NEW YORK, Sept. 17.

The War Department has given out several contracts for pistols while others are understood to be pending. The Winchester Repeating Arms Co., New Haven, Conn., and Landers, Frary & Clark, New Britain, Conn., have bought fair-sized lists of tools for this work. The National Cash Register Co., Dayton, Ohio, will also make pistols and a large contract with a Philadelphia company may shortly be closed.

Rathbone, Sard & Co., Albany, N. Y., are in the market for tools for machining 6-in. semi-steel shells, which will be made at its Albany and Aurora, Ill., foundries. The Michigan Stove Co., Detroit, and Foster, Merriam & Co., Meriden, Conn., have also taken contracts for semi-steel shells and will require new equipment.

The H. H. Franklin Mfg. Co., Syracuse, N. Y., is expanding its facilities for airplane motor work and has placed large orders for tools. It has taken contracts from the Wright-Martin Aircraft Corporation, New York, and the Pierce-Arrow Motor Car Co., Buffalo, for crankshafts, its output of which will be 100 a day.

The Wright-Martin Aircraft Corporation is buying a small lot of tools for its instruction department. The Davis-Bourneville Co., Jersey City, has bought a number of tools for its Elkhart, Ind., branch.

The Robert Dollar Co., New York, has purchased 12 plate-working machines for shipment to China, where they are to be used in shipyards.

New inquiry for cranes is very light. The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., is in the market for 24 hoists for its Alameda, Cal., shipyard. The Air Nitrates Corporation, New York, has bought 22 cranes for its new nitrate plants at Toledo and Elizabethtown, Ohio, 10 20-ton cranes being awarded to the Milwaukee Electric Crane & Mfg. Co., eight 5-ton cranes to the Northern Engineering Works and four transfer cranes to a New Jersey company. The Northern Engineering Works has also received orders for a 75-ton and a 20-ton crane from the Federal Shipbuilding Co., Kearny, N. J., and a 10-ton crane from the Vulcan Iron Works, Jersey City. The Cleveland Crane & Engi-

neering Co. has sold a 40-ton power house crane to the Berwin-White Coal Co., Philadelphia, for Winber, Pa.

In the issue of Aug. 29 it was stated in this column that the Locomobile Co. of America, Bridgeport, Conn., had taken over for the Trego Motors Corporation, New Haven, Conn., a contract for the manufacture of Liberty motors for tanks. The IRON AGE is now advised that this statement was incorrect and that there has been no transfer of a motor contract from the latter company to the former.

The Navy Department has secured, under a 20-year lease, the waterfront property of I. T. Williams & Sons, lumber dealers, Stapleton, S. I., at an aggregate rental of about \$1,300,000, for the establishment of a large drydock and ship repair works. The property has a frontage on New York Bay of about 1500 ft. The Government also has taken over the plant of the Merritt-Chapman Derrick & Wrecking Co. in the same district, and it is understood that both plants will be operated for ship repairing and reclaiming work.

The Sphere Diamond Die & Tool Mfg. Co., New York, has been incorporated with a capital of \$30,000 to manufacture small tools, dies, etc. J. S. Kislinger, H. S. David and M. C. Bennett, 93 Nassau Street, are the incorporators.

The Perfection Metal Products Co., New York, has been incorporated with a capital of \$25,000 to manufacture metal goods. C. R. Frazer, W. M. G. Watson and J. H. Claffy, 41 Park Row, are the incorporators.

The W. B. & R. Machine & Tool Corporation, Brooklyn, has been incorporated with a nominal capital of \$6,000 to manufacture tools and machinery. L. E. Bauser, F. J. Roos and G. M. Gustavson, 470 Forty-ninth Street, are the incorporators.

The Atlantic Can Co., 463 Greenwich Street, New York, manufacturer of tin cans, etc., has increased its capital from \$10,000 to \$50,000.

The Anderson Steam Vulcanizer Co., New York, has been incorporated with a capital of \$50,000 to manufacture vulcanizing equipment. S. Lattimore, A. B. and G. E. Freeman, 10 West Sixty-sixth Street, are the incorporators.

The Russell Foundry & Machine Works, Long Island City, N. Y., manufacturer of machinery, will erect a one-

story addition, 25 x 100 ft. John T. Woodruff & Son, Bridge Plaza, Long Island City, have the contract.

The C. & V. Mfg. Co., New York, has been incorporated with a capital of \$200,000 to manufacture special composition for airplane propellers. P. Horowitz and M. Schnitzer, 424 East 141st Street, are the incorporators.

The Decorated Metal Mfg. Co., 196 Degraw Street, Brooklyn, manufacturer of metal goods, has increased its capital from \$100,000 to \$150,000.

The Kenmore Machine Mfg. Co., New York, has been incorporated with a capital of \$30,000 to manufacture machinery. P. H. Waring, E. M. Morrison and E. Claus, 156 Sixty-seventh Street, are the incorporators.

The Atlantic Basin Iron Works, Summit Street, Brooklyn, manufacturer of machinery, is said to have acquired the west end of the block adjoining its works at 11-27 Inlay Street, about 180 x 200 ft., to be used for expansion.

The Victor Barge Corporation, New York, has been incorporated with a capital of \$15,000 to build barges and other vessels. M. C. Sullivan, J. C. Duke and B. B. Mead, 1999 Washington Avenue, are the incorporators.

The Indestructo Lens & Windshield Co., Brooklyn, has been incorporated with a capital of \$90,000 to manufacture automobile windshields and kindred specialties. L. Bartelstone, A. H. Bloom and J. D. Glespen, 655 Fifty-first Street, are the incorporators.

The Wilson Welding Repair Co., New York, has been incorporated with a capital of \$50,000 to operate a machine shop and welding repair plant. D. H. Wilson, Jr., F. E. Hasler and H. F. Bertine, 2 Rector Street, are the incorporators.

The West Motor Co., Inc., 52 Vanderbilt Avenue, New York, has increased its capital from \$25,000 to \$50,000.

The Acason Fleet, Inc., has been incorporated with a capital of \$10,000 to manufacture motors, engines, etc. C. W. and E. P. Decker and H. A. Kiep, Jr., 339 Pearl Street, are the incorporators.

The Safety At Sea Corporation, New York, has been incorporated with a capital of \$200,000 to manufacture life saving devices. H. O. Perrin, M. C. Monroe and J. J. Macklin, 1027 Ogden Avenue, are the incorporators.

George H. Thatcher & Co., Leonard Street, Albany, N. Y., manufacturers of castings, etc., have had plans drawn for a one-story, brick and steel machine shop, 50 x 100 ft., to cost about \$15,000.

The Utica Cutlery Co., Wheeler Avenue, Utica, N. Y., has increased its capital from \$100,000 to \$200,000.

The New Jersey Graphite Co., Oak Ridge, N. J., has been incorporated with a capital of \$250,000 to manufacture graphite products. William D. Cochrane, Summit; J. Harold Dutcher and Arthur M. Langworthy, 277 Broadway, New York, are the incorporators.

The Franco-American Steel Corporation, East Orange, N. J., has been incorporated with a capital of \$1,500,000 to manufacture steel products. Harry H. Picking, Charles O. Geyer and Stanley L. Gedney, Jr., East Orange, are the incorporators.

The Weehawken Tungsten Lamp Co., 340 Hudson Avenue, Weehawken, N. J., is having plans prepared for the construction of a two-story plant, 50 x 80 ft., on Gregory Avenue, to cost \$10,000.

In addition to the one-story extension, 40 x 130 ft., to be erected at the plant of the International Arms & Fuze Co., Bloomfield, N. J., the company will build a one-story addition, 20 x 190 ft., to its heat treating shop.

The Empire Cream Separator Co., Bloomfield, N. J., manufacturer of dairy machinery, will make alterations and extensions in its plant to cost about \$10,300.

The Builders Hoist & Machine Co., 1 Union Street, Jersey City, N. J., has filed plans for the construction of a one-story building at 937-47 Garfield Avenue, to cost about \$10,000.

The Burnrite Coal Briquet Co., 142 Broadway, New York, has filed plans for its new manufacturing works at Avenue A, Alpine and Earl streets, Newark, N. J., to cost about \$90,000. The plant will consist of a main structure, one, two and four stories, 66½ x 88 ft.; three one-story shops, 31 x 164 ft., 42 x 42 ft. and 52 x 54 ft., respectively, and a two-story shop, 24 x 40 ft. A steel coal conveyor trestle 280 ft. long, to be equipped with conveyor system, will also be erected.

The Luthy Storage Battery Co., Newark, N. J., has been incorporated with a capital of \$700,000 to manufacture electric storage batteries and other electrical equipment. James A. Burke, Summit; A. P. Nelson and William Hughes, Newark, are the incorporators.

The Duplex Whistle Co., Newark, N. J., has been organized to manufacture large and small metal whistles, with

works at 22 Plane Street. Emanuel W. Kaiser, 38 Elm Kinney Street, heads the company.

The Frank F. Smith Metal Window Hardware Co., 4 Clay Street, Newark, N. J., manufacturer of hardware specialties, has increased its capital from \$25,000 to \$100,000. The company has also changed its name to the Frank F. Smith Hardware, Inc.

The Modern Toy Co., 171 Belmont Avenue, Brooklyn, reported considering plans for the construction of a one-story plant, 95 x 150 ft., at Junius Street and Riverdale Avenue, to cost \$20,000. It is said the works will be equipped for the manufacture of valves.

The Newburgh Shipyards Corporation, Newburgh, N. Y., providing facilities at its plant to allow the construction of a completed vessel every 30 days. It has contracts for the construction of 10 freight ships, each 420 ft. long and 54 ft. wide.

The International Arms & Fuze Co., Bloomfield, N. J., had plans prepared for a one-story brick addition, 40 x 120 ft., on Davis Lane.

The Board of Water Commissioners, Dover, N. J., is considering the installation of new motor-driven pumping machinery at the municipal waterworks.

The Dubois Machine Shop, Albany, N. Y., has increased its capital from \$25,000 to \$100,000.

New England

Boston, Sept. 14.

The even current of business in New England machine-tool factories continues with the exception of the Bridgeport shops which are beginning to feel some effect of the toolmakers' strike, although this is largely confined to machine shops and not to machine-tool shops. Some New England manufactories are participating in the contracts recently placed by the Locomobile Co., Bridgeport, but the New England expansion of any size has not been noted. Most of the orders are coming in from the Middle West where the Government is placing its large contracts. New incorporations and plant additions are notably absent from the week's news.

The Kelley-Spear Co., Portsmouth, Me., has been incorporated with authorized capital stock of \$750,000. F. R. Roe is president and E. H. Irwin treasurer.

The Locomobile Co., Bridgeport, Conn., has awarded to the T. J. Pardy Construction Co. a contract for an addition, 160 x 200 ft. and 120 x 200 ft., one story, and a boiler house, 35 x 48 ft.

The Taft-Pierce Mfg. Co., Woonsocket, R. I., has awarded a contract to the Eastern Construction Co. for an addition, 125 x 135 ft., four stories.

The Hendee Mfg. Co., Springfield, Mass., is asking bids on a new boiler house and a hardening shop.

The Ansonia Mfg. Co., Ansonia, Conn., has awarded to the Sperry Engineering Co., New Haven, a contract for an addition, 40 x 140 ft., one story.

Buffalo

Buffalo, Sept. 16.

The Buffalo Aeroplane Corporation, 885 Niagara Street, Buffalo, manufacturer of airplane propellers, has completed plans for a factory, 130 x 100 ft., which it will erect on West Avenue near Forest Avenue.

The Crosby Co., Buffalo, manufacturer of sheet metal specialties, has taken out a building permit for an addition to its plant on Pratt Street.

The New York Car Wheel Co., M. R. Cooley, president, 15 Forest Avenue, Buffalo, has awarded contract for the erection of an addition, 58 x 158 ft., to its foundry at Forest and Bird avenues and the New York Central Railroad Belt Line, to cost \$30,000.

The High Speed Hammer Co., Inc., Rochester, N. Y., is now occupying its new modern factory building at 213 Norton Street, Rochester, and has about trebled its production of high speed hammers, motor-driven drill presses, etc.

The Union Tool Co. has moved into its new building at Norton and North Clinton streets, Rochester, N. Y., and greatly increased its jobbing machine shop equipment.

The American Brake Shoe & Foundry Co. has acquired the plant formerly occupied by the Brown Folding Machine Co., Erie, Pa., which it will equip for the manufacture of small parts for large guns. A new plant will be erected by the Brown Folding Machine Co.

The Erie Specialty Co., Erie, Pa., will enlarge its plant

the erection of an addition, 53 x 165 ft. The company is wholly on Government work, having been engaged for a long time in the manufacture of airplane parts. Its capital stock has been increased from \$350,000 to \$500,000.

The Modern Tool Co., Erie, will enlarge its plant by the erection of an addition to cost \$70,000.

The Saxer Machinery Co. succeeds the Saxer-Creider Machinery Co., Inc., Erie, Pa., in the manufacture of cranes, hydraulic machinery and various machine tools.

The McKinnott Chain Co., 252 Amherst Street, Buffalo, is said to be planning for the construction of an addition to its plant at Tonawanda, N. Y., for the manufacture of chains.

The Spencer Lens Co., manufacturer of microscopes, etc., 102 Niagara Street, Buffalo, J. Ott, general manager, has contracted for a two-story annealing and molding building, 40 x 60 ft., at its Hamburg, N. Y., plant.

The Fairbanks Co., Binghamton, N. Y., is having plans prepared for an addition to its foundry, 40 x 72 ft., and a new building, 32 x 36 ft., two stories.

The New York Central Railroad Co. has had plans prepared for a mechanical coaling plant to be installed at Tonawanda, N. Y., for the St. Lawrence Division. B. C. Martin, Union Station, is in charge.

The Automobile Products Mfg. Co., 40 Elm Street, Buffalo, will build a one-story extension, 24 x 30 ft., on Gifford Street.

The United States Hame Mfg. Co., 135 Tonawanda Street, Buffalo, will build a four-story addition to its plant, 30 x 50 ft. and 30 x 84 ft., at an estimated cost of \$25,000.

The P. J. Murphy Battery Corporation, Niagara Falls, N. Y., has been incorporated with a capital of \$10,000 to manufacture batteries and other electrical equipment. C. R. Evans, N. and P. J. Murphy, Niagara Falls, are the incorporators.

The Lumen Bearing Co., 167 Lathrop Street, Buffalo, has awarded a contract to the Schaaf Co., Mutual Life Building, for a one-story foundry, 60 x 100 ft., to cost \$15,000.

The Symington-Anderson Co., University Avenue, Rochester, N. Y., is building a one-story addition at its gun works, 40 x 115 ft., to cost about \$15,000.

The Bridgeford Machine Tool Works, Winton Road North, Rochester, N. Y., is taking bids for a one and two-story addition, 156 x 275 ft., to its works.

The Stillwell Mfg. Corporation, Rockville Center, N. Y., has changed its name to the Nassau Valve & Pump Corporation.

The Board of Public Works, Watertown, N. Y., has completed plans for its new municipal electric generating plant to be located about one mile from the city limits, and will soon call for bids for the structure and machinery. An appropriation of \$300,000 has been arranged for construction. Thomas L. Tomlines, City Bank Building, Syracuse, N. Y., is the engineer.

The George W. Korn Razor Mfg. Co., Salamanca, N. Y., has increased its capital from \$50,000 to \$100,000.

The E. R. Caldwell & Son Brass Co., 619 West Fayette Street, Syracuse, N. Y., manufacturer of brass castings, etc., has increased its capital from \$50,000 to \$200,000.

Philadelphia

PHILADELPHIA, Sept. 16.

No action has been taken at this writing by the Baldwin Locomotive Works, Philadelphia, toward purchasing machine tools and cranes for the contemplated Chicago plant. Philadelphia dealers have been somewhat slow in submitting quotations because of negotiations with their factories as to whether they or the Chicago agencies would receive credit for orders taken here.

Philadelphia dealers are doing a very satisfactory business, though, with one or two exceptions, sales have not been in large lots. One of the exceptions was an order for about \$125,000 worth of equipment placed with a leading dealer by the Savage Arms Corporation for its new Philadelphia plant, formerly the stove foundry of Isaac A. Sheppard & Co. This plant will make gun mounts for 3-in. guns. Equipment in the plant of the Defiance Mfg. Co., Philadelphia, which the Savage Arms Corporation also purchased, is being moved to the Sheppard plant, also considerable equipment from the Sharon, Pa., plant of the Savage corporation.

Government departments are buying steadily through local dealers. Machine shops at shell-loading plants and cantonnments have called for a few hundred tools. The War Department bought several tools for each of 27 cantonnments which will have their own machine shops.

The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., continues to buy for its Alameda, Cal., shipyard. The Bethlehem Steel Co. is in the market for a small list, mostly boring machines.

The No. 2 plate and angle shop of the New York Shipbuilding Corporation was destroyed by fire Wednesday, Sept. 11, and much of the machinery was wrecked. Complete new motor equipment was immediately ordered and many of the plate-working machines will have to be replaced or rebuilt. The loss totalled several hundred thousand dollars.

A Philadelphia company may shortly close a large contract with the War Department for pistols. If the deal goes through, several hundred Lincoln-type manufacturing milling machines and other tools will be required.

The William Cramp & Sons Ship & Engine Building Co., Beach and Ball streets, Philadelphia, has acquired for a consideration said to be about \$100,000 a tract of about 11 acres in the Frankford section, on the south side of Edmund Street, east of Bridge Street, purchased as one allotment; and the adjoining site, 396 x 401 ft., at the corner of Bridge and Edmund streets.

The Midvale Steel & Ordnance Co., Widener Building, Philadelphia, has awarded a contract to Barclay White & Co., 1713 Sansom Street, for a one-story forge shop addition, 175 x 280 ft., to its gun works at Nicetown, at a cost of \$50,000.

The Philadelphia Rapid Transit Co., Land Title Building, Philadelphia, has received approval from the Public Service Commission to enter into agreement with the United States Housing Commission for a loan of \$1,740,000, to be used for extending its system for transporting workers in local war industries. The fund will be divided into appropriations for the purchase of 90 new cars, additions and betterments to electric substations to provide increased capacity, and for extensions in the electric feeder lines.

The Yarnall-Waring Co., Mermaid Avenue, Chestnut Hill, Philadelphia, manufacturer of valves, pipe-joint clamps, etc., has filed plans for a one-story brick addition, 40 x 128 ft., to cost \$15,000.

To provide additional shop facilities, the David Lupton Sons Co., Allegheny Avenue and Tulip Street, Philadelphia, has acquired property on Willard and Witte streets from Harry E. Thompson. The plot consists of a one-story shop building of 28,200 sq. ft. on Willard Street, with shop and office on Allegheny Avenue, totaling 14,550 sq. ft., and an adjoining piece of land on Witte Street, aggregating 11,900 sq. ft. At its steel sash manufacturing plant it is building a one-story works, 140 x 300 ft., with extension, 50 x 200 ft.

The Tinius Olsen Testing Machine Co., 500 North Twelfth Street, Philadelphia, has filed plans for a one-story addition to cost about \$7,400.

The Ordnance Department, Washington, has acquired for \$136,405 a tract of property at Fox and Stokley streets and Roberts Avenue, Philadelphia, consisting of about 15½ acres. The land will be used as a site for the proposed Government works for the production of large caliber guns. The department is taking bids for the construction of a one-story brick building at the Frankford Arsenal, to be used as a tool hardening shop, and for a two-story carpenter and wood-working plant, 59 x 243 ft.

The Bureau of Yards and Docks, Navy Department, Washington, C. W. Parks, chief, is taking bids for a sea-plane hangar, 50 x 150 x 200 ft., to be erected on a local site, with construction and repair facilities, at an estimated cost of \$200,000. In connection with the new emergency hospital to be erected by the bureau on Gray's Ferry Road at a cost of \$350,000, a two-story boiler plant will be constructed, 48 x 67 ft.

The General Machine & Mfg. Co., Philadelphia, has been incorporated in Delaware with capital of \$20,000 by R. R. Biddle, J. H. D. Eagan and C. H. Rubican.

The Delaware Storage & Freezing Co., American and Callowhill streets, Philadelphia, will build an addition to its engine plant for works operation.

The Logan Iron & Steel Co., Morris Building, Philadelphia, has increased its capital from \$240,000 to \$480,000.

The Franklin Hardware Co., Philadelphia, manufacturer of hardware, has increased its capital from \$30,000 to \$100,000.

The Buckwalter Stove Co., Royersford, Pa., manufacturer of stoves, heaters and ranges, has acquired adjoining property, and is said to be planning for an addition.

The Emergency Fleet Corporation, Philadelphia, has taken over the Gloucester City, N. J., shipyards of the Pusey & Jones Co., Wilmington, Del., known as the Pennsylvania Shipbuilding Co., and the New Jersey Shipbuilding Co., respectively. It is understood that the change is made to increase the operating facilities and production. M. E. Davis has recently become general manager at both yards.

Fire, Sept. 11, destroyed a plate and angle shop, and power plant at the shipbuilding works of the New York Shipbuilding Co., Camden, N. J., with loss reported at about \$500,000. The shops were located at the lower end of the main yard, and will be replaced with new structures. It is said that the plant is so equipped that little delay will ensue in the construction of torpedo boat destroyers now being produced in the damaged portion of the works. M. A. Neeland is president.

The Beaumont Mfg. Co., Camden, N. J., has been incorporated with a capital of \$60,000 by R. H. Beaumont, H. E. Birch and E. A. Thumler, Camden, to manufacture electrical appliances.

The Sheet Metal Construction Co., Delaware Avenue and Wood Street, Camden, N. J., has received a contract from the Emergency Fleet Corporation for sheet metal to be used in connection with the establishment of a new settlement at Therlo, near Chester, Pa., for shipyard workers. The contract is said to total about \$250,000. The local plant will give employment to about 100 men to carry out the contract. William W. Walters and Charles L. Sharp operate the company.

The Vineland Scientific Glass Co., Vineland, N. J., recently organized, is planning for the operation of a plant for the manufacture of tubing and kindred glass specialties. William V. McLaughlin and Joseph Conde are officials of the company.

Over 75 per cent of the different industrial plants at Trenton, N. J., are now engaged in the manufacture of war munitions, with production varying from 80 to 95 per cent exclusively on Government contracts.

The Clark Pipe Co., West Newton, Pa., is considering the enlargement of its works.

The Anthracite Briquetting Co., Sunbury, Pa., has increased its capital from \$5,000 to \$150,000 for proposed extensions.

The Landis Tool Co., Waynesboro, Pa., manufacturer of grinding machines and other machine tools, has commenced the enlargement of its plant at Greencastle.

The Light Mfg. & Foundry Co., Union and Queen streets, Pottstown, Pa., manufacturer of aluminum castings, etc., is said to be planning for a one-story addition to its plant at West Chester, 30 x 180 ft.

The Salem Brass & Iron Mfg. Co., Salem, N. J., manufacturer of cast iron products, is considering the erection of a new one-story machine shop, about 50 x 100 ft., at its Bridgeton works.

Cleveland

CLEVELAND, Sept. 16.

There is an increased demand for machine tools from Detroit automobile manufacturers, who up to now have not manufactured commercial type cars, but are planning to engage wholly in Government work after Jan. 1. Inquiry in the Cleveland territory for small lots of machines continues very active. Additional equipment is required for gun munition, airplane, Liberty motor and fighting tank work.

The Hudson Motor Car Co., Detroit, is planning to buy a large amount of machinery to completely equip a munition shop. It is understood that it will provide capacity for the manufacture of 2000 155-mm. shells per day. The Continental Motors Co. is inquiring for 12 turret lathes for its Muskegon, Mich., plant. The Ford Motor Co. is still buying equipment for its Hamilton, Ohio, plant and is expected to need some additional equipment for building 10,000 2-man tanks. The Packard Motor Car Co. is expected to come in the market for some additional equipment. The American Brake Shoe & Foundry Co., which inquired last week for 150 machines for gun and shell work, has purchased some of its equipment. An order for boosters for gas shells is pending and will probably be placed in Cleveland. A large number of screw machines will be required for this work.

New demand from shipbuilding companies in this section is light although the Emergency Fleet Corporation is inquiring for two 48 in. x 20 ft. lathes for installation in a Cleveland forge shop, and the American Shipbuilding Co. has purchased an 84-in. vertical boring mill.

The Dann Products Co., Cleveland, is in the market for eight milling machines and four grinders for making gun parts.

The Victor R. Browning Co., Cleveland, will build a new machine shop, 40 x 54 ft. It is in the market for a 30-in. hydraulic press.

The Commercial Steel Castings Co., Marion, Ohio, which was organized a few months ago to manufacture open-hearth steel castings, has placed its foundry in operation.

The building is 120 x 190 ft., has a capacity of about 20 tons per day, and is equipped with a 16-ton open-hearth furnace.

The American Crane & Engineering Co., Toledo, Ohio, recently organized, plans to lease or erect a plant in the immediate future for the manufacture of locomotive cranes. It is not connected with the Toledo Bridge & Crane Co., but is a separate corporation and the business of the two companies will not conflict. Among those interested are C. H. Tucker, W. W. Billingslee and others of the Toledo Bridge & Crane Co., A. J. and A. L. Johnson and J. H. O'Leary. The company will engage in Government work.

The Willys-Overland Co., Toledo, has received new contracts to the amount of \$15,000,000 for Liberty and Curtiss airplane motors. They will be made in Toledo and Elyria, Ohio, and Elmira, N. Y.

The Toledo Screw Products Co., Toledo, Ohio, is planning the erection of a one-story addition, 40 x 200 ft.

The American Forge & Machine Co., Canton, Ohio, is inquiring for five boring mills, five shapers and three engine lathes for making gun parts.

The V. L. Ney Hay Tool Co., Canton, Ohio, has been incorporated with a capital stock of \$25,000 by V. L. Ney, P. J. Bernower and others.

The Massillon Steel Casting Co., Massillon, Ohio, has increased its capital stock from \$250,000 to \$500,000.

Detroit

DETROIT, Sept. 16.

The Ford Motor Co., Detroit, has announced that it will build no more pleasure automobiles during the war. Its motor department will be enlarged to increase its output of Liberty airplane motors. Production is now at the rate of 400 motors per day, 300 of which are for motor wagons.

The American Car & Foundry Co. has recently bought machine tools for its Detroit plant.

The Packard Motor Car Co., Detroit, has announced that it will henceforth devote its entire resources to war work. It is now producing airplane engines, motor trucks, airplane and war tractors and will operate 61 factory buildings for Government work. A force of 12,000 is employed.

The Wilson Foundry & Machine Co., Pontiac, Mich., has taken a contract for building motor-truck engines out of rejected Liberty airplane motor parts.

The Burroughs Adding Machine Co., Detroit, is building an addition to its shops for its regular product, and will require additional machine tools.

Among Michigan manufacturers to receive Government orders the past week are the following: Disco Mfg. Co., Detroit, 3000 synchronizing generators; Novo Engine Co., Lansing, air compressor outfits; Packard Motor Car Co., Detroit, 100 Liberty 12-cylinder engines; American Logging Tool Co., Evart, cant hooks; W. H. Anderson Tool & Supply Co., Detroit, cold chisels; Semet-Solvay Co., Detroit, coke; Dodge Brothers, Detroit, roadster; Lansing Co., Lansing, concrete mixer; American Lubricating Co., Detroit, oil-cups.

The Northway Motor & Mfg. Co., Detroit, a branch of the General Motors Corporation, has discontinued the manufacture of pleasure automobiles for the duration of the war and will make tractor motors. Some additional equipment has been bought.

The Olds Motor Co., Lansing, Mich., which is building a new plant, has been buying equipment.

The one-story building, 72 x 80 ft., to be erected by the Solvay Process Co., Syracuse, N. Y., at 1501 West Jefferson Avenue, Detroit, Mich., will be used as an electric power plant. It will cost about \$35,000.

The Liberty Motor Car Co., Detroit, has received a Government order for 2500 two-wheel trailers similar to those being manufactured by the Paige-Detroit Motor Car Co.

The McLouth Shipyards, Marine City, Mich., has been awarded a contract for ships with a total value of \$2,500,000 and work will be started at once on 10 ocean-going tugs. President S. C. McLouth states that the problem now consists in obtaining 500 to 600 men and preparing more adequate housing facilities.

The Shuler Axle Mfg. Co., Detroit, has increased its capital stock from \$150,000 to \$200,000. The plant has been enlarged, and as soon as conditions warrant, further expansions will be made. It is operating on a 95 per cent war basis.

The Hoensheid Steel Treating Co., West Fort Street, Detroit, is considering the erection of an extension to its plant to cost about \$30,000.

The Hoskins Mfg. Co., Buchanan Street, Detroit, manufacturer of ammeters and other electrical equipment, has awarded a contract to Hazleton & Clark, Detroit, for the

construction of a two-story and basement addition, 60 x 175 ft., on West Side Avenue.

The Buick Motor Car Co., Flint, Mich., has broken ground for the construction of a foundry to cost about \$200,000. It will be one and two stories, 120 x 300 ft. and 85 x 240 ft., and will be used for the production of aluminum castings and parts for the Government. The company has also purchased some machine tools for the expansion of its work on Liberty airplane motors.

Chicago

CHICAGO, Sept. 16.

The majority of machine-tool distributors, especially those handling varied lines, report a continuance of activity which bids fair to make this month exceed last in volume of sales. Turret lathes have been in excellent demand, orders for good-sized groups of machines coming from several directions, all required, of course, for war work. Small and medium-sized engine lathes are not as active as they were, and there is a tendency to hold the new draft accountable for this, some employers apparently being uncertain as to how long they and their employees will be left at their regular employment. Collections in some directions are rather slow.

Chicago sales managers have been East looking into the status of the proposed locomotive plant of the Baldwin Locomotive Works at East Chicago, but they have not much to report, except that the construction of the plant awaits Government order, as it is understood that the contemplated plant was inspired in the first place by the Government.

In the purchase of tools a more decided preference is shown for standard makes, purchasers evidently not wanting to do any experimenting. The Buda Co., Harvey, Ill., has a further inquiry before the trade. Recent purchases of turret lathes have been made by the Nash Motors Co., Kenosha, Wis.; International Harvester Co., Chicago; Pyle-National Co., Chicago, and the F. N. Spacke Machine Co., Indianapolis.

Plans have been prepared for a one-story addition, 41 x 49 ft., to the factory of the D. O. James Mfg. Co., gear maker, 1120-1122 West Monroe Street, Chicago, to cost \$3,000. The building, for which the Broline-Nolan Co. 8 South Dearborn Street, has the general contract, will contain one 3-ton crane.

The Kropp Forge Co., Cicero, Ill., will erect a one-story fireproof boiler house, 42 x 50 ft., to cost \$7,000.

The W. D. Allen Mfg. Co. manufacturer of brass goods, 361 West Lake Street, Chicago, has postponed the building of a one-story factory, 100 x 300 ft., at Twelfth Street and Walker Avenue. When erected it will cost about \$150,000.

William S. Tothill, manufacturer of playground equipment, 1807 Webster Avenue, Chicago, has placed contracts for a one-story addition, 70 x 96 ft., to his factory at 1807-1815 Webster Avenue, to cost \$10,000.

The general contract, on a percentage basis, for a packing plant to cost \$1,000,000 at the Union Stock Yards, Sioux City, Iowa, will soon be placed for the Midland Packing Co. by Gardner & Lindberg, engineers, 140 South Dearborn Street, Chicago.

The General American Tank Car Corporation, Indiana Harbor, Ind., which has large Government orders, has purchased the site and factory of the Indiana Car & Equipment Co. adjoining its plant.

The Staley Starch Mfg. Co., Decatur, Ill., will build a factory, 50 x 240 ft., for machine-shop purposes.

The H. Mueller Mfg. Co., Decatur, Ill., will build a reclamation plant at a cost of \$20,000 to utilize its waste material.

The additions to be erected by the Amalgamated Machinery Corporation, 72 West Adams Street, Chicago, at its works on Racine Avenue, will consist of an assembling shop, 50 x 250 ft.; planer building, 110 x 160 ft., and pattern works, 100 x 175 ft., all one story, to cost about \$95,000.

The People's Gas Light & Coke Co., South Michigan Avenue Chicago, has broken ground for a one and two-story engine plant, 18 x 90 ft., at its power station on Division Street, to cost \$50,000.

The Frank Foundry Co., Moline, Ill., is building a one-story addition, 25 x 40 ft.

The Western Cartridge Co., East Alton, Ill., has broken ground for the construction of two new additions to its plant, each two-stories, 50 x 150 ft., to cost \$100,000.

The Menominee Electric Mfg. Co., Cairo, Ill., is building a new plant on Upper Sycamore Street to cost about \$55,000. Henry Tideman is president.

The Northwestern Stamping Co., Burlington, Iowa, is building a new one-story plant, about 100 x 300 ft.

Indianapolis

INDIANAPOLIS, Sept. 16.

The Indiana Power & Water Co., Bloomfield, Ind., has increased its capital stock from \$500,000 to \$1,000,000.

The General American Mfg. Co., East Chicago, Ind., has been incorporated with \$200,000 capital stock to manufacture railroad cars. The directors are Max Epstein, David Copeland, Elias Mayer, Michael P. Kraffmiller, J. Horace Harding, Henry E. Butler and Henry Ollesheimer.

The General American Tank Car Corporation, East Chicago, has bought the property and equipment of the Indiana Car & Equipment Co. and will complete the contracts on hand.

Lightning, Sept. 12, caused \$80,000 damage to the Fort Wayne & Northern Indiana Traction Co.'s power house, Ft. Wayne, Ind.

The Pennsylvania Railroad will build an addition to its machine shops at Indianapolis. Among the other improvements will be a boiler shop and an electric traveling crane.

George B. Ayres, Anderson, Ind., and Paul H. White, Indianapolis, have bought the stock of the Star Tractor Co., Findlay, Ohio, Mr. Ayres becoming president and Mr. White secretary-treasurer of the reorganized company. The deal involved approximately \$200,000. Mr. Ayres was formerly president of the Hill Pump Co., Anderson.

Milwaukee

MILWAUKEE, Sept. 16.

An insistent broadening demand for machine-tools is reported by local manufacturers; milling machines particularly are in heavy demand. Large-lot business is almost entirely absent, new business being confined principally to one or a few tools. The volume of new orders, however, is such that delivery schedules are being extended to as much as four and five months on certain types. The Central States are furnishing an increasing number of orders as plants in this section are being converted more and more to war work. The volume of business from the East is also being well maintained.

Shipbuilding in the Middle West, principally in the Milwaukee section, is experiencing its greatest growth. Existing yards are taking on much new business and new yards are getting ready to handle orders placed some time ago. These industries are constantly purchasing equipment and their requirements are so urgent that the used tool market is kept bare of supplies.

The Wisconsin Shipbuilding & Navigation Corporation, Milwaukee, the organization of which was reported several months ago, has completed arrangements for a shipbuilding plant at Kewaunee, Wis. It has purchased 40 acres at the mouth of the Kewaunee River and intends to invest approximately \$200,000 in the construction of berths, drydock, machine-shop, and other buildings for steel and wooden vessels. Plans are in progress and work will begin before the close of the month. Facilities will be provided for building eight vessels at one time. Among Milwaukee interests backing the project are: Theodore Vilter, Vilter Mfg. Co.; Paul E. Thomas, Kemp Smith Mfg. Co.; George F. Gerlinger, Gerlinger Steel Casting Co.; Philip Schwab, head of the Philip Schwab Co., machinists; William W. Allis, William H. Gillen, George T. Johnson, and William H. Upmeyer.

The Manitowoc Shipbuilding Co., Manitowoc, Wis., has acquired the site of the Burger Boat Co., adjoining its plant, and will make extensive enlargements to handle new Government contracts for 24 ships. This purchase gives the Manitowoc company 750 ft. additional dock room on the Manitowoc River. The Burger company has acquired five and one-half acres on the west side of the river, opposite the former site, which will be improved at once and facilities provided for boat construction and repairs on a larger scale than formerly. The Burger company has contracts valued at more than \$1,000,000 for wooden tugs and other small vessels. L. E. Geer is general manager of the Manitowoc Shipbuilding Co., and Henry Burger is principal owner of the Burger company.

The Newton Engineering Co., 185 Mason Street, Milwaukee, has changed its corporate style to the Fabricated Ship Corporation with capital stock of \$600,000. As previously noted, the Newton company and the Coddington Engineering Co., North Milwaukee, have consolidated to engage in the construction of steel vessels for the Government. The shipyard which the Fabricated company is establishing at the foot of Twelfth Street is expected to begin actual construction within 10 days or two weeks. Alfred L. Newton is secretary.

The Miller Ice & Cold Storage Co., Milwaukee, has been incorporated with a capital stock of \$100,000 by members

of the Fred Miller Brewing Co., to engage in general refrigeration and the manufacture of ice. Part of the brewing plant will be used and extensive improvements are contemplated, but details have not been completed. Emil P. Miller is secretary and treasurer.

The Smith Engineering Works, Milwaukee, has awarded the general contract for the erection of a two-story machine-shop addition, 65 x 100 ft., to Hackendahl & Schmidt, 1513 St. Paul Avenue, at a cost of about \$32,500. The additional facilities are required for building continuous milling machines in behalf of the Davis-Thompson Co., Milwaukee, and the overflow of machine work from the present plant. T. L. Smith is president and general manager.

The Rusco Electric Products Co., Ladysmith, Wis., has been incorporated with a capital stock of \$10,000 to generate electric power and make electrical appliances.

The Wisconsin Gun Co., Milwaukee, manufacturing 75-mm. field pieces, will build a new power plant costing \$180,000, in addition to erecting a duplicate of the original main building, which involved a total investment of more than \$1,000,000. Work on the new shop is well under way and is expected to be completed by Oct. 1. Construction of the power house will begin within a week or 10 days. H. J. Wiegand is general manager.

Cincinnati

CINCINNATI, Sept. 16.

The Baldwin Locomotive Co. seems to be slow in placing orders on the large list issued some time ago. As far as can be ascertained no local orders have as yet been placed for machine tools that will be needed for the tractor plant of Henry Ford & Son, Inc., to be erected at Hamilton, Ohio. Single tools have been ordered for different railroad shops throughout the country. Second-hand machine tools, such as planers and large lathes are very hard to obtain and rarely stay on the market very long. Deliveries of machine tool castings are fairly satisfactory.

The housing of workmen is a problem of much importance in Hamilton, Dayton and Springfield, Ohio. Large war contracts in these cities are reported and strenuous efforts are being made to provide quarters for additional workmen.

Both skilled and common labor is very scarce, but it is generally believed that the extensions of the draft age will augment the ranks of men employed by many essential industries. A slight improvement has been noted in the supply of common labor.

The new plant of the Central Frog & Switch Co., Hyde Park, Cincinnati, has been completed and machinery is being installed. The building is 92 x 140 ft., one story, of brick, concrete and steel. The company hopes to have the plant in full operation before Oct. 15.

The United States Cast Iron Pipe & Foundry Co. is having plans prepared for a machine shop addition to its plant at Addyston, Ohio, a Cincinnati suburb.

The plant of the John B. Morris Foundry Co., Cincinnati, is being remodeled and new equipment installed. George McG. Morris is president.

It is reported that the Ypsilanti Reed Furniture Co., Iona, Mich., will establish a branch plant at Winton Place, Cincinnati.

The R. K. LeBlond Machine Tool Co., Cincinnati, will make an addition to its plant in Hyde Park, 125 x 600 ft., one story, of sawtooth roof construction.

The Lunkenheimer Co., Cincinnati, manufacturer of engineering specialties, will build a one-story addition to its plant in West End, 60 x 120 ft., of concrete and brick.

The Special Tool Engineering Mfg. Co., Dayton, Ohio, has been incorporated with \$50,000 capital stock by Joseph G. Collison, C. J. Weinman and others. Nothing is yet known as to its manufacturing plans.

The Western Tool & Mfg. Co., Springfield, Ohio, has increased its capital stock from \$50,000 to \$100,000 to take care of its increasing business.

The Liberty Die & Tool Co., Columbus, Ohio, has been incorporated with \$25,000 capital stock by Frank Antes, Homer C. Price and others.

The Eclipse Stove Co., Mansfield, Ohio, has been incorporated with \$300,000 capital stock by Paul R. Tapan and others.

The North Electric Mfg. Co., Galion, Ohio, has increased its capital stock from \$1,000,000 to \$2,000,000. No announcement has been made as to the purpose of the increase.

The Fyr-Fyter Co., Dayton, Ohio, has increased its capital stock from \$300,000 to \$750,000 and will purchase additional equipment. The company recently received a large Government order for fire extinguishers to be shipped to France.

Baltimore

BALTIMORE, Sept. 16.

The Hyattstown Roller Mills, Hyattstown, Md., is seeking prices on power gearing and installation. Mortimer & Luhn are the proprietors.

The Reynolds Corporation, Louisville, Ky., plans the establishment of a plant at Bristol, Va., to manufacture cardboard powder containers for the Government.

The Federal Steel Products Co., Point Pleasant, W. Va., has been incorporated with \$100,000 capital stock by Walter A. Windsor, E. A. Holmes and J. S. Spencer.

An electric power plant will be built at Mt. Airy, N. C., by the City Commissioners at a cost of about \$50,000.

The Charleston Consolidated Railway & Lighting Co., Charleston, S. C., plans the expenditure of about \$700,000 to increase facilities. The equipment will include turbine generator, boilers, condensers, coal-handling apparatus, etc.

The new works for the manufacture of gas bombs to be constructed by the War Department at Saltville, Va., will cost about \$250,000. A 12-acre site has been secured, and the initial buildings will cover about one-half of this property and consist of a general manufacturing plant, gas producer works, retort houses, electric power plant and other structures.

The Bureau of Yards and Docks, Washington, has had plans prepared for a new galvanizing plant at Norfolk, Va., at a cost of about \$100,000.

The Josey Hardware Co., Charlotte, N. C., has been incorporated by R. C. Josey and associates, with capital of \$50,000, to manufacture hardware specialties.

P. F. Somers, Stony Point, N. C., has organized a company to establish a plant for the manufacture of a patented metal coupler. It is understood that a site for the proposed works has been selected.

The new plant of the Union Shipbuilding Co., Fairfield, Md., will consist of 10 ways, with machine shop, foundry, boiler house and other structures. It will be equipped to build wooden vessels of large type.

An ice-manufacturing plant with initial capacity of about 10 tons per day will be constructed by the Citizens, Ice & Cold Storage Co., Jackson, Ga., a new organization headed by W. E. Merck. The plant will be 30 x 60 ft., and will be electrically operated.

The Georgia Welding Co., Atlanta, Ga., has been incorporated with a capital of \$100,000. Elmer Oliver and C. E. Gregory are the principal incorporators.

The Tidewater Power Co., Wilmington, N. C., has arranged with the War Industries Board for an appropriation of \$400,000 for extensions in its electric generating plant and system.

The West Coast Shipbuilding Co., Everett, Wash., is considering the construction of a shipbuilding plant at Newbern, N. C., to be operated for the Government, consisting of three ways with necessary structures for building different types of vessels.

The Hillsboro Shipbuilding Co., Tampa, Fla., recently organized, is planning for the immediate erection of a plant for the construction of wooden vessels. The main building will be two stories, consisting of machine shop, mold loft and other departments, about 40 x 150 ft.; a smaller two-story structure and a number of one-story shops, with electric sub-station, will also be built. W. H. Kendrick is vice-president and general manager.

The Central South

LOUISVILLE, KY., Sept. 15.

The demand for machinery is not quite so active, but enough Government work is coming in to keep most of the plants busy. Eastern Kentucky coal and oil development concerns are among the largest buyers just now.

The Louisville office of the Fairbanks-Morse Co. reports an active demand for farm engines and pumps.

The Pittsburg Coal Co., Louisville, is in the market for a locomotive crane for its yards.

The Cooley Mfg. Co., Chattanooga, Tenn., capital \$37,500, has been incorporated by A. J. Cooley and others to manufacture steel castings.

The Badger Aluminum Co., Louisville, has increased its capital from \$1,000 to \$10,000.

Frank Brame, Jr., Seelbach Hotel, Louisville, is asking prices on 60-hp. locomotive fire box boilers.

The W. & Taylor Co., James Building, Chattanooga, Tenn., has asked for prices on a 5-ton, 36-in. gauge, saddle tank rod locomotive.

The Southern Railway & Light Co., Natchez, Miss., is in the market for a 500-hp. boiler, not less than 150 lb. pressure.

The Southern Machinery Co., Knoxville, is looking for a 150-hp. return tubular boiler, with stack and fittings.

White & Bishop, Bolivar, Tenn., will rebuild their cotton gin, recently burned.

St. Louis

ST. LOUIS, Mo., Sept. 16.

The East Side Foundry & Machine Co., East St. Louis, Ill., is in the market for foundry and machine shop equipment for its new plant. E. T. Rhodes, Belleville, Ill., should be addressed.

The Gulf States Gas Corporation, New Orleans, La., capitalized at \$5,000,000, will build and equip a pipe line to cost with pumps, etc., \$2,000,000. H. P. Westcott, Erie, Pa., is the engineer in charge. M. Janse is president.

The Archer Lumber Co., Helena, Ark., will improve its plant at South Helena at a cost of \$150,000. Dry kilns, dimension lumber plant and power plant are included in the plans.

The Standard Electrode Co., Shreveport, La., will equip a large plant for the manufacture of electrodes. James Kelby, New Orleans; J. Ed. Bailey, T. E. Bird and W. F. Bradolph, Shreveport, are stockholders.

The Vegetable Oil & Refining Co., Shawnee, Okla., J. E. and J. A. Richey and others of Oklahoma City, Okla., will equip a refinery to cost about \$50,000.

The Missouri Pacific Railroad will extend its roundhouse and machine shops at Hoxie, Ark., at a cost of about \$150,000. H. R. Carpenter, St. Louis, is chief engineer.

The War Department, Washington, will increase the waterworks plant capacity at Jefferson Barracks, Mo.

Duncan, Okla., C. W. Fowler, city clerk, will add two pumps of 500,000 gal. per day capacity as well as other machinery at its waterworks. The Benham Engineering Co., Oklahoma City, Okla., is in charge.

The Talbot Reel & Mfg. Co., Lydia Avenue and Thirtieth Street, Kansas City, Mo., has awarded a contract to Hoffman Brothers, Ridge Building, Kansas City, for two additions for the manufacture of gun sights, 55 x 125 ft., two stories and basement; and 70 x 130 ft., two stories and basement, to cost approximately \$70,000 each.

The two-story addition, 90 x 175 ft., to be erected by the Oliver Electric Mfg. Co., 2215 Lucas Avenue, St. Louis, will cost about \$30,000.

The University of Missouri, Columbia, Mo., has had plans prepared for a one-story addition to its machine shop.

The Midwest Wire & Iron Co., Kansas City, Mo., is planning a plant to replace its works recently destroyed by fire.

The American Car & Foundry Co., Syndicate Trust Building, St. Louis, will build a two-story machine shop and pattern works, 95 x 240 ft., on a side fronting on the Wabash tracks at St. Charles, Mo., to cost about \$100,000.

Texas

AUSTIN, Sept. 14.

The American-Rio Grande Land & Irrigation Co., Mercedes, will double its plant and bring under irrigation 60,000 acres.

Martin F. Head, Tampico, Mexico, and associates will build a 50-ton ice plant and a 500-ton cold storage plant.

The Tampico Light & Power Co., Tampico, Mexico, will install a new 3000 kw. generator in its electric light and power plant.

Additional equipment will be installed at the pumping plant of the Mexican Gulf Petroleum Co., Tampico, Mexico, for increasing the daily capacity to 5000 bbl.

The National Shipbuilding Co., Orange, Tex., is planning for extensions at its shipyard. It is also proposed to construct a new electric power plant.

The Houston Shipbuilding Co., Houston, Tex., has increased its capital from \$20,000 to \$50,000.



The Accompanying Picture Is a View of the Ruins of a Disastrous Fire which Occurred in Canton, Ohio, on Aug. 25. The building in the foreground housed a drug business, which is still being carried on. At the left of the picture is the Empire Block of Canton. Both structures were protected by metal roofs. The photograph was obtained from the Berger Mfg. Co., Canton, Ohio, manufacturer of sheet metal products, and is offered as convincing evidence that a sheet metal roof provides great protection in time of fire.

The Pacific Northwest

SEATTLE, Sept. 10.

The most serious factor in the industrial situation in the Northwest is the increasing shortage of labor. In the shipyards of Seattle alone it is stated more than 3000 men are needed. The mining industry is also handicapped by the shortage and operators are planning to ask the Government to supply men from non-essential industries for the next few months.

The Northwest Steel Co., Portland, plans the immediate enlargement of its rivet and structural shops and crane runway at a cost of about \$25,000. Plans are also under way for a one-story shop building to cost \$70,000 and a two-story shop to cost \$20,000.

The Columbia River Shipbuilding Co., Portland, plans the construction of a plate shop, 80 x 580 ft., to cost about \$70,000.

A two-story factory will be built by the Universal Lock Co., Portland, at First and Hawthorne streets.

The Smith & Watson Iron Works, Portland, contemplates the construction of a two-story foundry, 50 x 100 ft., to cost \$6,000.

The Foundation Co., Portland, will build a joiner shop, 70 x 70 ft., to cost \$7,500.

Plans for an outfitting dock, with three one-story sheds, are under way by Grant Smith, Porter, Guthrie & Co., Portland, to cost \$25,000.

The Astoria Marine Iron Works, Astoria, Ore., is constructing a three-story machine shop and storehouse, 30 x 80 ft. A 50-ton crane is being installed in the machine shop.

The plant of the Stillwater Lumber Co., Vader, Ore., was recently destroyed by fire with a loss of \$125,000.

Work will begin shortly on the one-story heavy timbered building to be erected for the Air Reduction Co., Seattle, at a cost of about \$30,000. An extensive line of welding and cutting supplies will be manufactured.

The Ballard Galvanizing Co., Seattle, recently incorporated with stock of \$15,000 by H. A. Wismer, E. A. Jackson, H. H. Warner and others, plans the establishment of a galvanizing plant.

Preparations are under way for additional buildings at the plant of the Pacific Car & Foundry Co. at East Fifty-fifth street, Portland, consisting of a crane runway and plate shop, 100 x 340 ft. The improvements will cost \$30,000.

The Willamette Iron & Steel Works, Portland, has taken a contract for the installation of machinery for some of the wooden vessels of the Emergency Fleet Corporation and is making the marine and donkey engines for this work.

The McDougall-Overmire Co., Portland, has been incorporated with a capital of \$50,000 with C. C. Overmire, president and manager; A. F. McDougall, vice-president, and Matt McDougall, secretary and treasurer. It intends to engage in ship outfitting and general ship repair work, and is erecting a building on a site 200 x 650 ft. The plant will also be equipped to build marine boilers and water and oil tanks.

The Ilwaco Shipbuilding Co., Ilwaco, Wash., has been incorporated with a capital of \$50,000 by M. E. Sinclair, W. G. McPherson and F. B. Page.

Canada

TORONTO, Sept. 16.

The Motor Truck Co. of Canada, Ltd., Windsor, Ont., has been incorporated with a capital stock of \$200,000 by Trevor G. Murton and Horace M. Hackett, both of Detroit, Mich.; Ernest S. Wigle and Gerald McHugh, Windsor, Ont., and others, to manufacture motor trucks, vehicles, etc.

The Airo Rubber, Ltd., Montreal, has been incorporated with a capital stock of \$100,000 by Eugene Sansregret, Joseph Latrelle, Joseph C. Petitclerc and others to manufacture rubber goods, etc.

The St. Mary's Wood Specialty Co., St. Mary's, Ont., is in the market for an automatic engine, 30 to 40 hp.

The Hydro Electric Power Commission will build a power plant at Ranney's Falls, Campbellford, near Peterboro, Ont., which will generate from 8000 to 10,000 hp. and cost \$1,250,000. Construction will begin this fall.

The A. B. Ormsby Co., Ltd., Toronto, is in the market for a 20 or 25-hp. three-phase 550-volt 25-cycle alternating current motor, 720 r.p.m.

It is reported that the Three Rivers Shipbuilding Co., Three Rivers, Que., has been sold to the Boston Shipping Co. The new company is said to have a contract for the construction of eight vessels, and is calling for 1000 men in addition to the 1000 already employed. Four vessels are nearing completion at the plant, and will be launched at an early date.

The Council of Summerland, B. C., proposes to build an addition and install equipment in its waterworks plant, to cost \$30,000.

The Canadian Pacific Railway Co., Windsor Station, Montreal, is repairing its factory and machine shop recently damaged by fire with a loss of \$10,000. New machinery will be required. A. K. Cameron is manager.

Harrison & Lambert, 744 Hastings Avenue West, Vancouver, B. C., are having plans prepared for the erection of a workshop and machine shop to cost about \$60,000.

Contracts have been awarded for the erection of an addition to the plant of the Montreal Locomotive Works, Ltd., 145 St. James Street, Montreal, to cost \$35,000.

The Sanderson Percy Co., 86 Adelaide Street West, Toronto, Ont., will build a one-story addition to its factory to cost \$15,000.

Wells & Gray, Ltd., 701 Confederation Life Building, Toronto, has the general contract for the erection of a firebrick plant at Whycomagh, N. S., for an American syndicate to cost \$150,000. Construction has been started.

Government Purchases

WASHINGTON, Sept. 16.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, for supplies for the naval service as follows: Schedule 5779½, for South Charleston, 2 patternmakers' lathes; 5798½, Portsmouth, 6 sensitive bench drills; 5815½, Puget Sound, 3 steel threading machines; 5840½, Brooklyn, tanks, rods, 1 hydraulic jack with pump, 2 engine lathes, 1 planer, 1 hacksaw and 1 forcing press; 5841½, New London, 1 crank shaper; 5842½, South Charleston, 6 milling machines; 5864½, Norfolk, 1 bench lathe; 5939½, f.o.b. works, foundry equipment; 5940½, South Charleston, 2 vertical drill machines; 5941½, South Charleston, 3 slotting machines; 5946½, Brooklyn, one 3-ton electric hoist.

Additional bids will be received by the Bureau of Supplies and Accounts, as follows: Schedule 1939, two double-head bolt cutting machines, one ball-bearing sensitive bench type drill, one 12-in. and one 14-in. floor type drilling machine, one 20-in. all-gear motor driven drilling and tapping machine, one 25-in. motor-driven standard vertical drill press, one 16-in. round-head eight-spindle vertical multiple drill, one 30-in. motor-driven disk grinder, one 20-in. motor-driven wet grinder, three 2-in. portable pneumatic pipe bending machines, two 2-in. motor-driven pipe bending and cutting machines, two 2-in. pipe threading and cutting machines, one motor-driven pipe threading and cutting machine, one No. 4 and one No. 5 arbor presses and one motor-driven triplex pressure pump, all for Philadelphia; schedule 1940, three 42-in. regular back-gear friction Bickford drills, two horizontal boring, milling and drilling machines, one No. 3 vertical spindle milling machine, two No. 3 duplex milling machines, one vertical surface grinder and two No. 12 belt-driven profiling machines, all for Washington.

NEW TRADE PUBLICATIONS

Industrial Goggles and Accessories.—Julius Kling Optical Co., 10 Malden Lane, New York. Catalog. Presents illustrations and brief descriptions of a line of industrial safety goggles fitted with a special type of surface ground lens. Among the various goggles shown are ones for chipping, chiseling in metal, breaking up or drilling brick or stone, welding, steel pouring, boiler making, grinding and filing and light machine work. Respirators for use in grinding or working in poisonous or irritating dusts and masks and helmets for welding and steel pouring are also shown. Each type of goggle or accessory is given a separate page and the particular features of the goggle and the work for which it is especially designed are brought out in each case.

Pull Switches.—Cutler-Hammer Mfg. Co., Milwaukee. Folder No. 271. Points out how current, copper and coal may be saved by the judicious use of properly located pull switches which permit lights that are not needed to be cut out of the circuit promptly. Illustrations and a brief description of the switch are presented and a condensed table of the various sizes that can be supplied is included.

Punching and Shearing Machinery.—Long & Allstatter Co., Hamilton, Ohio. Catalog, No. 21-A. Size 6½ x 10 in.; pages, 303. Presents illustrations and condensed specification tables of a line of power punching and shearing machines. All of the standard types of single and double end machines are covered, a separate page being given to each particular machine. Mention is made of horizontal punching and bending, punching and beveling, punching and coping and multiple punching and shearing machines of various types. The portion of the catalog devoted to each particular type of machine contains a brief general description of the work which the machines in that section are designed to do. A number of tables of useful information and a complete index which includes a numerically arranged one of photograph numbers are included.

Condensing Apparatus.—Wheeler Condenser & Engineering Co., Carteret, N. J. Bulletin No. 112-A. Discusses the fields best adapted to the jet and surface types of condensers and contains illustrations and descriptive matter pertaining to a line of condensing machinery, which includes not alone the condensers themselves but the pumps, cooling towers and other auxiliaries. The lines covered include surface, jet and barometric condensers, air, dry vacuum and centrifugal pumps and natural and forced draft cooling towers. In connection with the different pieces of apparatus, views of some of the parts are presented as well as photographs of complete installations. Mention is also made of a feed water heater and a line of multiple effect evaporators and dryers.

Concrete Industrial Houses.—Truscon Steel Co., Youngstown, Ohio. Booklet entitled "Permanent Homes Make Permanent Workers." Points out the advantages of employing stucco on metal lath in connection with industrial housing projects. Illustrations of complete houses and details of construction are presented, together with instructions for building such a house.

All-Steel Work Stands.—New Britain Machine Co., New Britain, Conn. Bulletin No. 1206-A. Deals with a workstand of all-steel construction for machine operators, assemblers, etc. The construction of the stand is described and a number of illustrations of the different arrangements of the trays and the drawers that can be supplied supplement the text matter. An illustrated description of the stand appeared in THE IRON AGE, Aug. 29, 1918.

Electric and Pneumatic Tools.—Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago. Circular No. 27. Gives illustrations and condensed specification tables of a line of pneumatic and electric tools which includes drilling, grinding and boring machines, pneumatic hammers for scaling, chipping, light riveting, etc., and a pneumatic sand rammer. The different sizes of each type of machine are given in the table together with data on the reversibility of the machine. In connection with the table for the pneumatic hammers, the work which each style will handle is indicated.

Boiler Accessories.—O. C. Woolson, 39 Cortlandt Street, New York. Booklet. Deals with a line of accessories for steam boiler installations, which includes fire clay covering for blow-off pipes, a three point and equalizer suspension for horizontal fire tube boilers, hand hole coverings, air tight doors and a clinker crusher. All of these are illustrated and briefly described, a pair of facing pages being given to each accessory with the illustration on one and the text matter on the other.

